This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

610.5
M67
S8t

A 413645

TRANSACTIONS

—OF THE—

MINNESOTA

STATE MEDICAL SOCIETY

1883.

ST. PAUL:
H. M. SMYTH PRINTING CO.
1883.

GENERAL LIBRARY
UNIVERSITY OF MICHIGAN
1817
ARTES · SCIENTIA · VERITAS

610.5
M67
58t

TRANSACTIONS

— OF THE —

MINNESOTA

State Medical Society

1883.

ST. PAUL:
H. M. SMYTH PRINTING COMPANY.
1883.

Officers of the Society.

PRESIDENT:

W. L. LINCOLN, M. D.

FIRST VICE-PRESIDENT:

E. J. DAVIS, M. D.

SECOND VICE-PRESIDENT:

JAMES DAVENPORT, M. D.

THIRD VICE-PRESIDENT:

R. L. MOORE, M. D.

TREASURER:

S. B. SHEARDOWN, M. D.

RECORDING SECRETARY:

C. H. BOARDMAN, M. D.

CORRESPONDING SECRETARY:

CLARA E. ATKINSON, M. D.

CENSORS.

FOR THREE YEARS—R. S. McMURDY, M. D.
A. W. STINCHFIELD, M. D.

FOR TWO YEARS— C. F. McCOMB, M. D.
J. B. McGAUGHEY, M. D.

FOR ONE YEAR— C. A. WHEATON, M. D.
DANIEL LEASURE, M. D.

medical
minerva
5-20-42
45320

PROCEEDINGS

OF THE

FIFTEENTH ANNUAL MEETING

OF THE

MINNESOTA STATE MEDICAL SOCIETY.

At 10 o'clock A. M. on Tuesday, the 19th of June, the Society met at Market Hall, Minneapolis, and was called to order by the President, Dr. Millard.

After prayer by the Rev. Mr. Satterlee, the roll was called, and seventy-five members answered to their names.

An address of welcome was delivered by Dr. McMurdy.

The credentials of Dr. Geo. B. Ayers, of Omaha, as a delegate from the Nebraska State Medical Society, were received, and Dr. Ayers was invited to take part in the deliberations of the Society.

It was moved that Drs. Rice and Gould, of Minnesota, be accorded the same privilege, but objection was made by Dr. E. J. Davis, on the ground that residents of the State are eligible to membership, and are therefore not entitled to become guests of the Society. The motion was withdrawn.

The committee on new members was appointed by the chair, as follows: Drs. Pratt, Thorn, Craig, Dunsmoor and Rosser, who reported as qualified for membership those whose names appear in the following list, and who, on motion, were elected members of the Society:

C. W. Hammes, New Trier.....Rush Coll., 1882.
P. A. Heitz, Hastings.....Heidelberg.
W. H. Williams, Minneapolis.....Ann Arbor, 1878.
C. E. Bean, St. Paul.....Louisville.
E. W. Hammer, Hastings .....
Jeremiah Koehl, Minneapolis.....Jefferson, 1868.
Ignatius Donnelly, Jr., St. Paul .....Jefferson, 1883.
E. S. Kelly, Minneapolis.....Rush, 1878.
G. S. Brigham, St. Cloud.....Burlington.
Bell M. Walrath, St. Paul.....Woman's Coll., Chicago, 1882.
W. C. Eustis, Farmington.....Bellevue, 1877.
O. A. Watier, Stillwater.....Victoria, (Canada) 1878.
H. E. Latz, Minneapolis.....Buffalo, 1880.
C. A. Entrup, Shakopee.....Ann Arbor, 1880.
A. S. Whetstone, Minneapolis.....Ann Arbor, 1880.
F. Allford, Minneapolis.....Chicago, 1876.
J. H. Dorsey, Minncapolis.....Washington Coll., (Balt.)
W. C. Voight, Stillwater.....Univ. of California.
W. M. Newhall, Red Wing.....Rush, 1883.
C. Williams, St. Paul.....Coll. Phys. and Surg. N. Y., 1874.
C. S. Stoddard, Redwood Falls.....Bellevue.
John A. Sweat, Minneapolis.....Bowdoin.
Frederick Koyl, Ada.....Queen's Coll., Ontario.
F. R. Burnham, St. Paul.....Detroit.
J. F. Fulton, St. Paul.....Univ. of Penna.
D. P. Bigger, Brainerd.....Kansas City.
W. T. Adams, Elgin.....Rush.
G. W. Davis, Rice's Point.....Detroit.
Paul C. Jensen, Albert Lea.....Ann Arbor.
A. R. Brackett, Minneapolis.....Ohio.
J. C. Cockburn, Minneapolis.....Harvard.
J. H. Fairfield, Minneapolis.....Univ. of Penna.
L. C. Mitchell, Minneapolis.....Univ. of N. Y.
W. F. Nye, Minneapolis.....Chicago.
C. H. Hunter, Minneapolis.....Coll. Phys. and Surg. N. Y.
J. H. Stewart, Minneapolis.....Bellevue.
E. E. Barnum, Minneapolis.....Ann Arbor.
C. L. Flannigan, Minneapolis....Coll. Phys. and Surg. St. Louis.
W. S. Laton, Minneapolis.....Long Island Coll.
J. R. Kinney, Minneapolis.....Bellevue.

T. M. T. McKennan, Minneapolis.....Univ. of Penna.
J. B. Cole, Minneiska.....Ann Arbor.
J. R. Johnson, Spring Valley.....McGill Coll.
J. E. Cheney, Brainerd.....Georgetown.
B. G. Merrill, Stillwater.....Bellevue.
Wm. Davis, St. Paul.....Harvard.
J. H. Stewart, Jun., St. Paul.....Univ. of N. Y.
Garrett Morphy, Garden City.....Univ. of Iowa.
J. C. Markoe, St. Paul.....Jefferson.
C. E. Lungren, St. Paul.....Chicago.
J. W. Chamberlain, St. Paul.....Rush.
J. W. Thompson, St. Paul.....Starling.
A. B. Ancker, St. Paul.....Ohio.
T. J. Cressy, Granite Falls.....Keokuk.
W. A. Hunt, Northfield.....Ann Arbor.

The Committee failed to recommend for membership Dr. T. G. Rainey, of Minneapolis, and Dr. J. W. B. Wellcome of Sleepy Eye, objections being made to both by members from their respective localities. The objections, however, were withdrawn in one case, and in the other were not properly substantiated; and on motion, Drs. Rainey and Wellcome were elected.

The Executive Committee reported the arrangements that had been made for the transaction of business, and at the same time extended a cordial invitation to the members of the Society and to ladies accompanying them to an entertainment at the close of the session, which included an excursion upon Lake Minnetonka and a banquet at the Hotel Lafayette.

The following resolutions, introduced by Dr. Talbot Jones, were unanimously adopted:

WHEREAS, The collections known as the Army Medical Library and Museum, of the Surgeon-General's office, Washington, D. C., are the most extensive and valuable in America and unequaled even in Europe, and their usefulness to the medical profession is everywhere conceded to be very great, as is evidenced in the many years spent in their collection, by their emphatic endorsement by said profession, and by the anxiety evinced lest they should be injured or destroyed; and

WHEREAS, This valuable collection is now placed in a building altogether inadequate to its proper care and protection, and is in constant danger of being destroyed by fire, which will cause an irreparable loss to the profession throughout the whole country, therefore

Resolved, That the Minnesota State Medical Society, recognizing the inestimable value of the Army Medical Library and Museum, believe that Congress will meet the wishes of the medical profession of the United States by making an appropriation sufficient to provide a fire-proof building suitable, both as regards security and size, to accommodate the collections; and they are respectfully but earnestly requested to vote such an appropriation.

Resolved, That a copy of these resolutions be sent to each Senator and Representative of our State, and that they be urged to use all their influence in bringing the matter before Congress and securing favorable action in the premises.

The credentials of Dr. Newhall as a delegate from the Goodhue Co. Medical Society, and of Dr. Marshall, from the Northwestern Inter-State Medical Association, were received, and these gentlemen welcomed by the Society.

The Society was invited by Dr. Stone, of Saint Paul, to attend his gynæcological clinic at the College Hospital on the following morning, and after some discussion, the invitation was accepted.

The Society then adjourned until 2 P. M.

AFTERNOON SESSION.

At 2:30 the society was called to order, and after Dr. Young, of Wisconsin, had been invited to a seat with the Assembly, the president, Dr. Millard, delivered the annual address, which was listened to with attention and well received, and was ordered to be printed.

The report of the Committee on Medical Education followed, by its chairman, Dr. Hewitt; its references to the new law regulating the practice of medicine in the State resulted in an informal discussion, in which questions were freely asked and answered. The report was referred to the Committee on Publication.

A case of leprosy (spedalskhed) was exhibited to the Society by Dr. Stone, which seemed to excite much interest.

The Committee on Practical Medicine then submit-

ted a report upon croup and diphtheria; the Chairman, Dr. Abbott, of Minneapolis, presenting in connection with the report a paper on tracheotomy, which was of unusual interest and value. A discussion ensued, in which the indications for and against tracheotomy in the diseases under consideration were freely canvassed; some contending that it should be resorted to upon the appearance, even to a slight degree, of laryngeal stenosis, and others questioned its utility if marked toxœmia exists. Several members testified to the difficulty in some cases, of differentiating between diphtheria and follicular tonsilitis; and it was suggested that as at times the exauthemata appear without their specific eruptions, or with these so slightly developed as to be scarcely observable, so it may be that diphtheria sometimes occurs without its characteristic local phenomena.

The report was referred to the Committee on Publication.

Adjournment until 7:30 P. M. was moved and carried.

EVENING SESSION.

The Society reassembled in the evening, when Dr. Wheaton, Chairman of the Committee on Surgery, presented, with the report of that Committee, a paper on Shock, which was a well-sustained argument for the abandonment of primary amputation after railway injury; the belief was expressed that a fatal result might often be averted if the operation were deferred until the period of reaction.

Much interest was manifested in the paper, from whose views there was no dissent; and after an informal debate upon the œtiology of Shock, the report was referred to the Committee on Publication.

Dr. Blitz read as the report of the Committee on

Ophthalmology, a paper upon Ophthalmia Neonatorum, which was ordered to be published.

After the reading of the report of the Committee on Necrology, the Society adjourned.

SECOND DAY.

WEDNESDAY MORNING.

The Society met at 10 A. M.

Dr. Lincoln, Chairman of the Committee on Obstetrics, submitted a report, which was read and referred to the appropriate Committee.

Dr. Sheardown introduced the following resolution:

WHEREAS, Our excellent Secretary, Dr. C. H. Boardman, has given much time and attention for several years to the duties of his office, in preparing the transactions, correcting proof, and conducting correspondence, therefore,

RESOLVED, That one hundred dollars be appropriated from the funds now in the hands of the Treasurer, as an acknowledgment to him of our appreciation of his work.

Dr. Pratt moved to amend by substituting the words two hundred instead of one. The amendment was accepted, and the resolution, as amended, was unanimously adopted.

The Secretary acknowledged the gift, and expressed his thanks to the Society for their generosity.

Dr. Boardman having called attention to the necessity of adopting such measures as will contribute to the improvement of the annual volume of Transactions, a committee of three was appointed, Drs. Boardman, Leasure and Abbott, to consider the subject. The subsequent report of the committee was an appeal to the Society, and especially to the chairmen of committees, to abandon

the practice of presenting as reports series of lists of cases and operations, which are little more than a catalogue of the achievements of members of the Society, and which, so far as they contribute nothing to our knowledge, are of no real value. It was urged that reports should be not a mere recapitulation, but original papers, and that recitals of interesting cases should find their appropriate places by themselves, except, of course, so far as they may be required to enforce principles or illustrate treatment.

The annual report of the Treasurer was rendered, as follows:

S. B. SHEARDOWN,

In Acct. with Minnesota State Medical Society.

		DR.
To amount in Treasury for 1882,		$ 227 05
Initiations and Certificates,		280 00
Annual Dues, 1882,		230 00
Delinquent Dues,		63 00
		$ 800 05

		CR.
By Amount Paid H. M. Smyth Printing Co.,		$ 349 00
" "	W. T. Rich,	6 50
" "	P. V. Brown,	1 75
" "	C. H. Boardman,	10 68
" "	C. B. Witherle,	6 00
" "	Janitor,	5 00
" "	S. B. Sheardown,	12 00
By Balance on hand,		409 12
		$ 800 05

S. B. SHEARDOWN, Treasurer.

Minneapolis, June 19th, 1883.

On motion, the report was approved and accepted.

On motion, by Dr. Leasure, it was ordered that the Northwestern Lancet be made the official organ of the Society. A brief discussion followed, as to whether the present form of the volume of Transactions shall be retained, or whether it shall appear in successive parts in the Lancet. It was decided that the form of the volume should not be changed.

By request, Dr. Leasure made an informal report to the Society as one of its delegates to the American Medical Association, at its late meeting in Cleveland.

Dr. Hunter, of Minneapolis, a pupil of Lister, demonstrated to the Society the practical application of the principles of Listerism, by dressing a compound fracture of the ankle in their presence.

Dr. Jones, of St. Paul, Chairman of the Committee on Diseases of the Nervous System, submitted the report of that committee, which was ordered to be published.

The Society adjourned until 2 P.M.

AFTERNOON SESSION.

The Society met at the hour assigned, when the report of the Committee on Diseases of Children, Dr. Owens, Chairman, was presented and referred to the Publication Committee, and the same disposition was made of the report of the Committee on Materia Medica, of which Dr. Slagle was Chairman.

The Annual Essay, by Dr. Riggs, upon Functional Diseases of the Nervous System, was a careful treatment of the subject selected; it commanded the close attention of the audience, and merited the vote of thanks with which it was received. On motion, it was ordered to be published.

A paper by Dr. Fulton, of St. Paul, upon acute diseases of the ear, was read by title and referred to the Committee on Publication.

The hour for the annual election of officers having arrived, Dr. Simpson, of Minneapolis, and Dr. Lincoln, of Wabasha, were nominated. Dr. Lincoln received a majority of votes, and upon motion, his election was made unanimous.

Further elections resulted as follows:

E. J. Davis, of Mankato, First Vice-President.

James Davenport, of St. Paul, Second Vice-President.

R. L. Moore, of Spring Valley, Third Vice-President.

S. B. Sheardown, of Stockton, Treasurer.

C. H. Boardman, of St. Paul, Recording Secretary.

Clara E. Atkinson, of St. Paul, Corresponding Secretary.

Drs. R. S. McMurdy, of Minneapolis, and A. W. Stinchfield, of Eyota, were elected Censors for three years.

Honorary membership was conferred upon Drs. Fenger and C. T. Parkes, of Chicago, Dr. Geo. B. Ayers, of Omaha, and Dr. C. Carli, of Stillwater. Upon presentation to the Society, Dr. Lincoln returned his thanks for the honor bestowed upon him, and expressed his appreciation of it as an evidence of confidence and esteem; he also appealed to the Society to co-operate heartily with him in the pursuance of such measures as may be adopted for the common advantage.

The report of the Committee on Hygiene, Climatology and Epidemics, in the absence of the Chairman, Dr. Rosser, was ordered to be published.

Votes of thanks were tendered to the physicians of Minneapolis and to the retiring President, Dr. Millard.

The claims of Albert Lea and of Stillwater were presented as places suitable for the next meeting of the Society, and, on motion, Stillwater was selected.

The following committees were announced:

Executive Committee.—P. H. Millard, Chairman, W. H. Pratt, O. J. Evans, E. J. Abbott and J. C. Rhodes.

Committee on Practical Medicine.—A. W. Abbott, Chairman, W. T. Adams, A. W. Stinchfield, C. W. Tinker and F. M. Rose.

Committee on Surgery.—C. H. Hunter, Chairman, T. S. McDavitt, F. E. Bissell, J. G. Brigham and F. J. Cressy.

Committee on Obstetrics.—T. C. Clarke, Chairman, J. H. Fairfield, Ida Clarke, A. J. Murdock and H. L. McKinstry.

Committee on Epidemics, Hyg. and Clim.—S. P. Dodge, Chairman, C. B. Witherle, C. N. Hewitt, N. S. Tefft and B. J. Merrill.

Committee on Finance.—W. Thorn, Chairman, S. D. Flagg, F H. Milligan, E. B. Bigelow and J. H. Dunn.

Committee on Necrology.—Franklin Staples, W. H. Hollister, Wm. Frisbee, V. P. Kennedy and D. Leasure.

Committee on Publication.—C. H. Boardman, Jay Owens, A. E. Senkler, Talbot Jones and S. B. Sheardown.

Committee on Nervous Diseases.—J. H. James, Chairman, Wm. Davis, C. L. Wells, G. H. Knight, Mary G. Hood, C. Gronwald and C. E. Riggs.

Committee on Gynæcology.—G. F. French, Chairman, N. K. Whittemore, Clara E. Atkinson, D. B. Collins, G. R. Maloney, Ira N. Bishop, Talbot Jones and W. L. Beebe.

Committe on Diseases of Children.—C. E. Smith, Chairman, A. T. Wass, Bruno Jaehrig, W. H. Powell, J. F. Force, W. W. Furber, D. F. Brooks, C. N. Clarke and J. E. Finch.

Committee on Materia Medica.—Wm. Frisbie, Chairman, James Davenport, Chas Dolan, G. W. Emery and A. W. Giddings.

Committee on Ophthalmology.—J. F. Fulton, Chairman, A. Blitz and J. W. Chamberlain.

Committtee on Medical Education.—D. W. Hand,

Chairman, Franklin Staples, A. W. Parsons, S. B. Sperry and R. S. McMurdy.

Committee on Medical Jurisprudence.—Chas. Hill, Chairman, A. F. Ritchie, H. H. Kimball, A. Wharton and C. H. Boardman.

Delegates to American Medical Association. — F. A. Blackman, J. E. Bowers, Wm. W. Mayo, S. C. McCormick, C. H. Boardman, J. H Stewart, Sen., J. W. Andrews, Otis Ayer, A. W. Daniels, C. N. Hewitt, Talbot Jones, J. C. Rosser, E. J. Davis, R. L. Moore, C. A. Wheaton, A. W. Abbott, Mary G. Hood, F. M. Rose, A. F. Ritchie, A. T. Conley, C. F. McComb, N. T. Whittemore and D. S. Cummings.

The Society then adjourned to meet at Stillwater, upon the 3d Tuesday of June, 1884, at 10 A. M.

C. H. BOARDMAN,
Secretary.

ADDRESS OF WELCOME.

Gentlemen and Ladies, Members of the Minnesota State Medical Society:

To me has been assigned the pleasant duty, in behalf of the medical profession of Minneapolis, of extending to you a most hearty and cordial welcome; and although I have misimproved my opportunities, and have not done what I ought for the advancement of medical science and art—if in my brief address of welcome I can say something that will excite an effort in others more favorably situated or more fortunately endowed, I shall feel that this opportunity may not be without result; and I assure you it is a *personal* pleasure, for I have always felt the importance, perhaps necessity, of a more general and active concert of the members of the medical profession to accomplish the great purposes of eliciting truth, preserving principles, and benefiting mankind.

We cannot develop our physical, mental or moral capabilities alone. Neither can the great purposes of life for which we are intended, be accomplished, fort or happiness which we are constituted realized without the co-operation and compan others.

The natural characteristics of men being as va their faces, the comparison of diverse minds re their modification and improvement. And as no persons are placed in exactly the sam ition, or rounded by the same circumstances obser

tions and discipline, interchanging of experiences and acquisitions enlarges the capacity and enriches the understanding of all.

So generally has the advantage and even necessity of association for the advancement of useful knowledge been recognized, that learned societies, consisting of intellectual men voluntarily united for this purpose, have been formed and continued for many years under names indicative of the particular branch of learning they have been designed to promote.

These associations have not for their object only the acquiring of knowledge, but the more useful one of communicating it—in announcing discoveries, deducing general laws from numerous facts, correcting false theories, and rendering it accessible, useful and pleasing. All have been to a greater or less degree useful to mankind in general by enlarging the boundaries of learning, increasing the conveniences of human life, and teaching us how to make acquisitions; but especially have they been of advantage to the various professions for whose benefit they were organized, and by which they have been sustained. If such men as Abernethy, Brodie, Bateman, Sir Astley Cooper, Cline, Lawrence, and many others of similar ability and standing, originators and supporters of the London Medical and Chirurgical Society, thought association necessary for mutual improvement and the advancement of medical science, the medical men of this time might properly distrust their judgment were they to doubt the utility of medical societies.

But there are special reasons why the medical profession should enjoy the full benefit of associated talent, and feel the influence of a liberal and earnest consideration of the various topics which must claim the attention of the physician.

The time in which we live demands an enlightened and catholic spirit pervading the whole body; so that im-

provement in the science, shall correspond with the progress of our race in all that is great and worthy of the age, and here, perhaps, is one of the advantages, by no means the least, which will attend the associating of members of the profession; that it will elevate and enlarge the estimate of the work in which we are engaged, and make it appear as it truly is, worthy of the time and the energy of the most highly gifted minds. Properly considered, no pursuit has a more direct and powerful tendency to call forth the mental powers, and task them to the utmost of their capacities: comprising as the knowledge and practice of medicine does, both science and art, it is highly important, that there be a union and concentration of the various talents within the precincts of the profession. This can be done in no other way so well as by the combination of those who may be led by their different tastes or habits, or indications of duty, to pursue one or another of these branches with more zeal and earnestness. One man may have his mind directed to a particular subject, to which his peculiar mental constitution is especially adapted, and after having dwelt upon it with assiduity for years, accumulated facts and made generalizations, he can in one hour, communicate the result of all his labor to assembled members of a Society, saving time and labor for each member, equal to that which it has cost himself. Thus are brought into the common stock the gatherings of each; and not only is the sum total made larger, but a common interest is imparted and a truer sympathy is awakened, among all who arrive at the same grand result. The effect too, upon personal character of a well-regulated, well-attended Medical Association is not to be overlooked, but the greatest inducement which can be held out to unite an associaton of this kind, is the improvement of its members in the knowledge of their profession.

Much may be acquired by reading, much by the careful observations, properly recorded of what comes under the

eye and hand of each practitioner, and those who silently cultivate science have a high claim to our respect; but that these solitary studies may be available for practical purposes, their results must be imparted to others. This *can* be done by the press, but if first presented to living, talking men, assembled for the purpose of hearing and conferring, impressions will be made, thought excited, and errors corrected or truths confirmed by the action of different minds. The debate upon points of difficulty and upon diverse theories, will do much to awaken a spirit of inquiry. The very excitement of coming together, quickening mind and stimulating activity, will be of great use, especially for those who are in the beginning of their career.

I am sure that for some of us to attend these meetings a degree of effort is necessary, and some sacrifice is unavoidable. The country practitioner, particularly, must lose more time, and be at more expense, but he will receive many enjoyments and advantages from meeting with his professional brethren. The dull uniformity of the drudging toil of a country town is pleasantly broken up, and he abandons for a few hours the confined ideas of a limited circle, who are unable to enter into his professional feelings, to mingle with those who *can* appreciate his aspirations, and returns to his course of duties with broader and more enlightened views, it may be, or at least cheered by the sympathy of those engaged in the same pursuit in which he is engaged. As the long continued gentle exercise of any one of the senses, like that of watching the graceful moving of a field of grain, or listening to the murmur of streams, produces sleep, so does the undisturbed routine of professional duties induce intellectual somnolence in him who plods his daily round, unthoughtful of all besides the few familiar faces, objects and scenes which pass monotonously before him. He needs the stimulus of collision with those who have taken

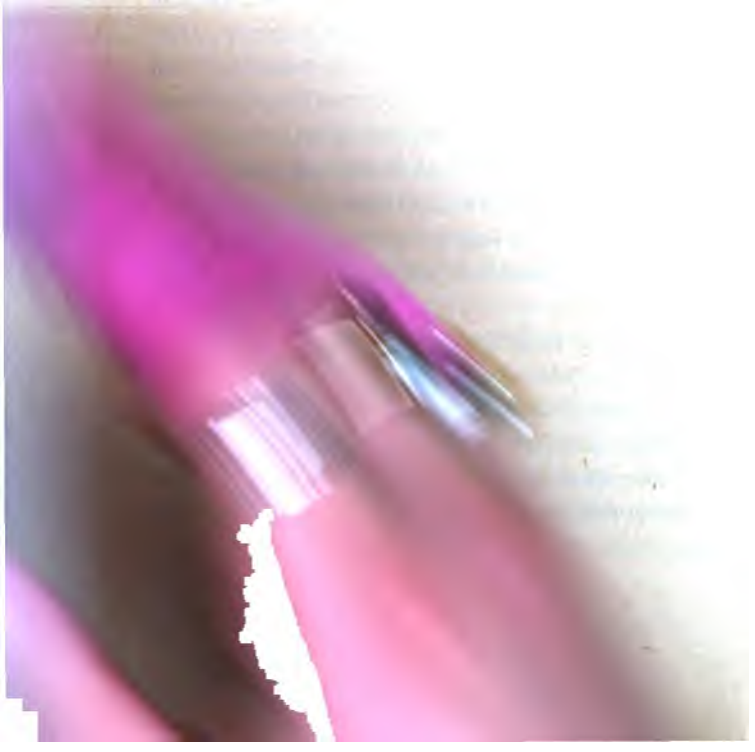
different or even similar views with himself upon subjects which they have separately studied, to awaken him from his aimless day-dreams.

> "For ground in yonder social mill
> We rub each other's angles down."

And in this friction with other minds flashes may be thrown off which will kindle ideas and give him subjects for agreeable and profitable meditation long after his return to his comparatively solitary life, and will reward him by brightening many an hour of depression. For as iron sharpeneth iron, so a man sharpeneth the countenance of his friend. And so, friends and fellow workers, let us sharpen our wits on this occasion by a hearty participation in all that can help us in our work. You come to us laden with the treasures of ideas or experience which another year has brought you. Some best fitted for it by circumstances or tastes, bring us scientific research; some ripe with experience come to us from hospital practice; some having the gift of the silvery tongue, come to charm us with your eloquence; and others come as learners now, who shall in future years be the leaders of these councils. We need you all. We have plodded through the year in storm and cold, in heat and moisture, sometimes jubilant, often discouraged. And you, as our guests, shall infuse into us new enthusiasm [illegible] good cheer. Let our deliberations be so [illegible] that each moment may be a jewel in our me[illegible]

Not within my recollection have we had the[illegible] this Society meeting in our city, and we sinc[illegible] and trust that this meeting may prove a pl[illegible] profitable one, that shall result in making every [illegible] better fitted for the duties of our profession, and t[illegible] than ever we shall feel the importance of attendin[illegible] at some sacrifice, the meetings of our State M[illegible] Society.

As Citizens of Minneapolis we also greet you; we are proud of our State, of her boundless prairies, and her myriads of lakes; of her charming climate; her schools and her colleges; all these you share with us; but above all we take pride in our beautiful city. It is not my province to inflict upon you statistics concerning our mills and manufactories, to tell you of our wonderful growth and prosperity, or to enlarge upon the brilliant future before us. All these you may see for yourselves. But let me assure you, as her representative on this occasion, that Minneapolis welcomes ever, and with all her heart, whatever of art, science, or culture, the world may send her. And gentlemen, as members of a most noble profession, she welcomes you.



PRESIDENT'S ADDRESS.

Gentlemen:

Custom demands that the President of this Association shall address you at each annual meeting, upon some topic or topics of prevailing interest to the profession.

I purpose treating briefly of some topics of special interest to us, and shall yield our valuable time for Committee reports.

The last year has been an epoch to the profession of Minnesota. Since our last meeting the American Medical Association have held one of the greatest and most interesting sessions of its existence. The profession of this State owe a lasting debt of gratitude to the medical gentlemen of St. Paul, who spent their valuable time and contributed to every detail of the success of that gathering. But a very small number of that learned body had ever visited the Northwest before, and without exception returned to their homes astounded at the magnitude and natural resources of this great empire and with a deep debt of gratitude to the people for their unbounded and unprecedented hospitality.

The generosity of our railway corporations did more to advertise the natural resources of this section than any other factor, and I feel that I but echo the sentiment of every member of this Society in thanking the profession of St. Paul and the managers of the different lines of transportation for contributing so greatly to the success of that meeting.

Gentlemen, micro-organisms and their part played in the animal and vegetable kingdoms continue to be the leading field for investigations by the scientific world. Out of an abstruse mass have been evolved data of inestimable value to the biologist and medical man.

It is in the part played by the different schools of bacteria in the animal kingdom that we as physicians and surgeons are most interested. That the progress made upon the study of bacteria in their relation to disease and surgery is equal to the hopes of the most sanguine all will admit. The scientific medical man was not content in establishing conclusively the part played by diseased germs in a few of our acute infectious diseases, but he has pushed his investigations still further, and from present appearances is about to revolutionize our theories in regard to many chronic diseases.

The theory of spontaneous generation in acute infectious disease is becoming quite a thing of the past, and no one now doubts the relation of bacteria to putrefaction, and no one now claims that decomposition ever occurs without lower organisms living on dead material. At present all evidence points towards the permanence of different forms of bacteria.

Every species retains it morphological characteristics, no matter in what soil it grows. Even minor points of shape remain constant, also chemical and vital characteristics. The bacillus producing splenic fever is not the cause of any other disease, and the bacteria of septicæmia do not produce tuberculosis or other affections.

The question of the stability of bacterial forms is one of great importance.

Were it possible to change harmless bacteria of putrefaction into potent disease germs through influences which occur in nature there would be little hope of eradicating any infectious diseases. Not only our profession but the scientific world have been startled by the investi-

gations and assertions of Koch during the last year. In the bacilli of tubercle the microscope reveals the probable cause of the insiduous and deadly ravages of a disease that causes the death of the greatest number of the human family of any malady. The discovery and investigations of Koch call for great reflection upon the part of the medical world. If the assertions of this careful observer are to be accredited, it is apparent that it becomes our duty to guard our patients from the possibly infectious nature of tuberculosis. The bacilli of tubercle is a recognized fact by the profession; that it is a product of tubercle or primary thereto, remains to be proven by further investigations. I think the present tendency of the profession is, that the bacilli are the product of tubercle or the tubercular diathesis and not primary thereto. Our clinical experience is such that it will require the strongest data possible to lead us to fear its infectious nature.

Its behavior by innoculation upon the lowest animals, and development by innoculations of pieces of glass and other foreign bodies, call for long and careful investigations in microscopical technique.

Many valuable facts for the profession will [illegible] edly be established by the present [illegible] different schools of bacteria. In [illegible] at the Brompton Hospital for Cons[illegible] have taught the profession some v[illegible] Microscopical research was made fo[illegible] one hundred and thirty-three cases [illegible] One hundred and nine of these cases w[illegible] tuberculosis, and bacilli were present in [illegible] six of the cases examined. Of the rem[illegible] presence was uncertain in one case and abs[illegible] two. Of the cases suffering of lung diffe[illegible] causes, emphysema, passive [illegible] tion a[illegible] monia, the bacilli were abs[illegible] have been obtained in the v[illegible]

wards, and innoculated upon the guinea pig with fatal effect. The microscopic appearance of sputum in obscure lung difficulty will be a winning factor in differential diagnosis in the future. This affords another instance of the necessity of the general practitioner being at least a practical microscopist.

We trust and hope the investigations of the coming decade will prove as beneficial in saving life in infectious diseases, as the past has in saving life from the ravages of bacteria in surgical practice.

When I glance over the history of surgery the last five years, I cannot but feel proud of this branch of our profession. That the great reduction in mortality in surgical practice is due to antiseptic dressings I am firmly convinced.

To Joseph Lister is due the greatest credit for having convinced the profession of the great need of perfect cleanliness and antiseptic precautions in dressing all open wounds. The facts are that Mr. Lister taught us the use of the first agents that combatted at least partially the ravages of bacteria in surgical practice.

By antiseptic surgery, operations are performed that were never undertaken previously, and the mortality from ...gical operations have been reduced by an astonishing ...tage.

...f our profession have misinterpreted the true ...of antiseptic surgery, and a disposition has ...d to an alarming extent to decry Lister and

...unciations of Listerism have quite reached ...d we prophecy for the memory of this dis- ...on a fame second to none.

...ongest opponents come from England, ...t have come in contact with some of ...surgeons know how great is the rivalry

among these men for personal favor and professional eminence.

The greatest friends of antiseptic surgery are in Germany and France, and these nations are foremost in investigations of Bacterism and their action in dead and living tissues. Some of its greatest enemies are within the circle of Mr. Lister's surgical practice.

The last few years has witnessed a tendency among the young men of our profession to favor a specialty in their early studies and drift immediately into their chosen branch. This I consider a grave error.

I think no man capable of becoming an adept in any branch of our profession, until he has had at least a fair experience in the general treatment of disease. The modern tendency of the public is decidedly favorable to the specialist, and in large cities the general practicioner has quite lost his calling.

The members of this Society are undoubtedly all aware that the last session of the Minnesota Legislature passed a "Medical Practice Act," the penalties of which become operative after December 31st of this year. I believe, gentlemen, this is a very fair bill and abreast of any act now in force in any of the States. The profession of the State seem much gratified at the passage of any bill, and it will certainly require your co-operation to make the enforcement of its provisions successful.

I can say for the gentlemen composing the medical examining board that they will endeavor to perform their part of their task honorably and justly to all parties, and I know you will consider our delicate positions in enforcing the provisions of the act before criticising us.

In conclusion, gentlemen, I feel it my duty to impress upon you the representations of the noblest of all professions, the necessity of greater union in our ranks, greater chivalry and frankness in our professional and personal

intercourse, and a united zeal in our endeavors to elevate our chosen avocation.

If we do not respect our profession and one another the public certainly will not.

If we must criticise the professional conduct of a colleague, it should be confined to our own ranks, and be devoid of dogmatism. It is our duty to look upon ourselves as others see us; that our profession does not receive that consideration from an exacting public that we are entitled to, we know fully well. In fact it is quite impossible to obtain any recognition at all.

We as a profession may be and probably are partially at fault for this state of affairs.

The medical gentlemen of this country should recognize that they are the exponents of one of the professions. They should not open the doors of their office to any man unless he possess a thorough literary education.

It is the individual practitioner that has flooded this country with so many incompetent medical men.

As long as we open our doors to young men lacking sufficient enterprise to obtain a good education, or those having made a failure in other avocations of life, just so long will the doors of medical colleges be open to receive them.

It is true that this is a free country, but none of the learned professions can safely admit illiteracy into their ranks. In this country of free schools if a man has a will there is a way and no sane medical man dare claim for a moment that a thorough preliminary education will dwarf even the greatest "medical genius."

The general practice of medicine is not based upon an exact science, consequently the public will always lend a willing ear to charlatanism.

We should purify our ranks of illiteracy, elevate the present standard of qualification to enter the profession and unite heart and hand in the pursuit of the noblest of all professions or avocations.

ANNUAL ESSAY.

FUNCTIONAL DISEASES OF THE NERVOUS SYSTEM.

An eminent jurist remarked to me a few years since that that sight which impressed him most while making a tour of Europe, was the throng of nervously-prostrated, broken-down Americans that flocked to those famous health resorts. These self-denying supplicants, crippled in the race of life before their sun had reached its zenith, seem to think that by devoting a few weeks or months, at least, to the worship of Hygeia that they may become the favored recipients of her mercy, forgetting that natural law is inexorable, and that scars, especially of nervous tissue, never wear out, but that on the contrary they perpetuate themselves forever. Modern research no longer seeks in "ancestral blood" the secrets of "hereditary" descent. The diseases that are truly hereditary are due to morbid changes, produced primarily in nervous matter. Injuries inflicted on the nervous system will produce symptoms, says Richardson, that pass to the offspring of the injured as distinctly as if the injury had been inflicted on the offspring. Thus epilepsy produced by nervous injury has been directly transmitted downwards in hereditary descent. Injuries to nervous matter, of such a character as to produce hereditary taint, must be inflicted on nervous centers, or trunks, and not on peripheral expansion of nerves. Those seeking health in foreign lands are but a fraction

of the great number whom circumstances compel to remain at home. The high pressure plane on which Americans are living, aided by auxiliary influences which we will shortly mention, is the principal cause of the nerve-sensitiveness of our age. From this fertile soil springs forth the nervous diathesis, the gigantic trunk of the great neurological tree whose branches extend from the Atlantic to the Pacific. If the dictum of advanced thought be true, that it is not the blood but the nerve centers that preside over the destinies of the future, is it not highly proper that this tide of nerve-sensitiveness be stemmed if our fond hopes of an ultimate America are ever to be realized?

While the assertion of Aristotle over two thousand years ago, "that all art and all wisdom have often been already fully explored and again quite forgotten," may possibly by confirmed by the student of ancient medical literature in some of the departments of medicine, yet its truthfulness cannot be affirmed concerning nervous diseases, especially of the functional variety—functional nervous diseases, and by the term functional we mean that class of diseases concerning whose nature the microscope and scalpel give us no information—are children of the present, not the past. Less than a quarter of a century ago, they were an almost unknown continent to medical men. Across its charmed boundaries few had dared to venture. Those who made the effort returned disheartened, saying like the spies of old that they were unable to go up and possess the land. History repeats itself, and in the person of Dr. Geo. Beard modern research found its Joshua. As the result of his labors, of "the fauna and flora" of this hitherto unknown land, we can speak with certainty. And as to "its rivers and skies," we are ikewise assured. Neurasthenia, the typical form of functional nervous trouble has for a long time been recognized in a vague, indefinite way both by the laity and the

profession under the guise of nervous debility, general debility, spinal weakness, and similar ambiguous expressions, but its protean symptoms have caused such a confusion of ideas as to evade heretofore scientific classification. The work of Dr. Beard has been, as described by himself, "to show the relation of these symptoms, their inter-dependence, to distinguish them from similar symptoms found in organic disease on the one hand and the symptoms of hysteria and hypochondria on the other, to unify and harmonize these complex elements, and to indicate their pathology, rational treatment and hygiene."

The first systematic article on this subject was written by Dr. Beard, in 1868, giving somewhat in detail, his observation of about thirty cases. In this country it attracted no attention, not even causing a ripple in the extremely placid stream of American medical thought. In England it stimulated one physician by the name of Campbell to write a book on the subject, the only noteworthy feature in it being its lack of originality. In Germany for the first, says Beard, "did it meet with a criticism and comment, at once sympathetic, intelligent and scientific." Prof. Erb, of Heidelberg, in the volume of Ziemssen's Cyclopædia that treats of disease of the spinal cord, under the head of Neurasthenia Spinalis, confirms the observations of Beard, and adds valuable observations of his own.

Both Erb and Beard failed, however, at this time, to distinguish between exhaustion of the brain and cord, but threw all the symptoms into one group and under one name, without observing their various relations or sources of origin. Afterwards, Beard evolved order out of chaos, and so accurate at present is the method of classification, that we are not only able to distinguish between the exhaustion of brain and cord, but also to recognize individual nerve-zones that are functionally affected. This exactitude in classification does not only give symmetry and position

in medical nosology, but it affords valuable suggestions as to therapeutic endeavor and hygiene, and enables us to treat with a degree of satisfaction at least, a class of cases which heretofore had proved intractable. Erb, Grasset and Rosenthal of Europe, and Jewel, Mitchell and Goodell of our own country are the principal authors who have amplified and added to Beard's original investigations.

Functional nervous disease is a malady of the living, and does not possess a tendency to death, but on the contrary, rather to avert it. These ailments that embitter our lives and render existence a burden, are not illumined by any light from the dead-house. Pathological data, in the flowing periods of Dr. Fothergill, "are as barren as a vestal virgin" for all purposes of investigation and research. The great wonder is how such a perversion of function can exist for years, many times without any organic lesion manifesting itself. These functional troubles occur more frequently in England than France, and more frequently still in France than in Spain, Italy, Russia or Germany. Neurasthenia and its allied diseases are preeminently American, and are principally found among the "well-to-do classes." The hospitals of our large cities furnish but few examples of these affections. The functional nervous troubles are, according to Beard, nervous dyspepsia, sick headache, chorea, insomnia, hay fever, hypochondria, hysteria and epilepsy, inebriety and insan-

The manner of evolution being first the soil of nerve-

liveness from which springs the nervous diathesis with

ious nerve-perturbation, such as nervous dyspepsia,

dache, chorea, etc., and if not arrested, its ulti-

opment into nervous exhaustion, insanity and

here are two types of these nervous patients:

Cassius, or the kind of men he dislikes, is

resentative of one class—"Let me have

hat are fat, sleek-headed men, and such

Yon Cassius has a lean and hungry

look; he thinks too much; such men are dangerous; would he were fatter; but I fear him not." While the kind of men he likes is a very fair description of the other class. Dr. Beard described many of his patients as giants in appearance; whilst Dr. Anstie very emphatically asserts that a healthy appearance and ruddy complexion does not exclude either structural or functional debility of the nervous system. The majority of patients suffering from nervous exhaustion who came to me for treatment during the past year have to all appearances been in robust health. They complained bitterly of the little sympathy they received from their friends, which was probably due to the fact that their symptoms being chiefly of a subjective instead of an objective nature, they were not duly appreciated.

Minnesota is more productive of these neuroses in proportion to her brain-working class than any other State in the Union. She shares with her sister States the intense civilization of the present age which is distinguished from that of the past (and ancient civilization is well known not to have been productive of nervousness) by the discovery of steam, the invention of the printing press, the telegraph and the increased activity in and of the sciences.

Add to modern civilization, which is the chief element, climatic influences with excess in life and work, and we have before us the principal factors in the development of American nervousness. Alternations of heat and cold applied to any portion of the body produce remarkably tonic effects. If a person be subjected to continuous cold or continuous heat, he will become languid and debilitated; while if the same person be subjected to alternation of heat and cold, instead of being debilitated he will be rendered intensely nervous, and will become very susceptible of extremes of temperature. Last summer the mercury registered 99 degrees, while during the winter the lowest point reached was 36 degrees, a range of 135 degrees.

"Half the year we freeze, half the year we roast." As a result of our climatic environment we are more sensitive to heat and cold than foreigners. We keep the temperature of our homes and asylums ten degrees warmer than do the English. Nervous patients cannot tolerate intense cold or prolonged heat, hence like the birds when winter comes they instinctively seek the south, and when the heat of summer approaches they avail themselves of the grateful coolness of our northern lakes. Also dryness of atmosphere tends to nerve-sensitiveness. A moderate rain-fall, with relatively speaking infrequent lakes, and a generally clear sky must produce a dry atmosphere. Aside from the rain-fall there are more clouds in different sections of the United States, and England and France, than in our own State. Clouds by virtue of a well-known physical law prevent evaporation, hence the very clouds decking the sky are conservators of moisture, and a moist atmosphere is inimical to nervousness. We see, therefore, that even a cloudless sky has its objections; a verification of the old proverb "that there is no rose without thorns." In winter our snow fall is generally light, the sky the greater part of the time is an undimmed azure; the atmosphere must consequently be very dry. Prolonged cold keeps us indoors, in an over-dry, over-heated atmosphere. These mutual influences act and inter-act upon each other, and the result of their combined action is an ever increasing nerve-susceptibility. According to Beard, a dry atmosphere, it matters not whether it be indoors or out, heightens all the processes of waste and repair; it accelerates, in other words, the wheels of being, hence we live more intensely in a dry atmosphere than a moist one. Prof. Huxley describes two kinds of perspiration, insensible and sensible. In the former the moisture of the body is eliminated in the form of vapor; in the latter it accumulates in varying quantity on its surface. Evaporation presupposes evolution and radiation of heat, and the

quantity of heat dissipated is in exact proportion to the activity with which the vital and complex changes we call life occur. In a dry atmosphere this metabolism of tissue takes place rapidly, the air as it were greedily absorbs the moisture of the body with a quickening of the machinery of life, and a consequent impoverishment of all the tissues, especially nervous tissue, of the body. If there be a moist atmosphere, sensible perspiration accumulates upon the surface of the body. The evolution and radiation of heat is lessened, and the wheels of metabolic activity are perceptibly slowed.

The exhausting tendency of a dry atmosphere, and the conservative nature of a moist one, is thus clearly indicated, while the exact relation of each to the increasing nervousness of the age, can be accurately estimated. The difference between the electrical condition of a dry and moist atmosphere has only to be investigated in order that its nerve-exciting tendency may be duly appreciated. Dr. Mitchell says that rheumatic and neuralgic patients can foretell, because of the aggravation of their symptoms, the approach of a storm hours or even a day before it breaks. That the symptoms of patients suffering from the neurosis are aggravated by the differences of electrical tension induced in the atmosphere by storms, has been frequently observed by myself. One of my patients, in addition to being restless, irritable and despondent, suffers from that form of morbid fear that we call pantaphobia—afraid of everything; she cannot be persuaded to leave the house until the sky has become clear. Another lady I have known to suffer markedly from the approach of a storm attended with great electrical phenomena. She did not complain of astraphobia, but of nausea, tremors, and severe pain in the ovarian region. The explanation of the nerve irritability above described is evidently a lack of equipoise in the electrical condition of the atmosphere acting upon a sensitive nervous system. Electrical phenom-

ena, whether attended by storms or not, always intensify the symptoms of the functional nervous diseases. The electrical disturbances that characterized the magnificent display and inimitable beauty of the Northern lights of last fall and winter, were attended with a general nerve irritability; many persons passed restless nights, while not a few were seriously prostrated. I always expect to find this class of patients worse just before and during a storm and am seldom disappointed. Any elementary work of physics will explain the philosophy of the above statements. In a dry atmosphere the diffusion of electrical force is not uniform, and hence the prevailing condition is that of inequality of tension; while, on the contrary, in a moist atmosphere, conduction of electrical force takes place naturally and easily. Its diffusion is symmetrical and general, and therefore there does not arise that disturbing element, viz., an inequality of tension that characterizes a dry atmosphere. The lack of electrical equipoise that obtains in a dry atmosphere disturbs the electrical condition of the human body, and nerve irritation is the result. In a moist atmosphere, says Beard, the body nerve has its own electrical condition seriously disturbed, nor is it generally affected by the want of equilibrium in the atmosphere in which it exists. If a dry atmosphere by virtue of its inequality of electrical tension thus irritates and exhausts a sensitive nervous system, will not the same cause ultimately, if acting for an indefinite period upon a healthy nervous system, undermine and exhaust it?

"Everywhere," says Herbert Spencer, at his farewell banquet, "have I been struck with the number of faces which told in strong lines of burdens that had been borne. I have been struck too with the large number of gray-haired men, and in every circle I have met men who have themselves suffered from nervous collapse, due to stress of business, and I do but echo the opinion of all observant

persons that I have spoken to that immense injury is being done by this high-pressure life." He then suggests that there has been too much of the gospel of work, and now he considers it high time to preach the gospel of relaxation. This subtile English thinker then adds the great weight of his authority to the vital fact to which we have already adverted, viz.: That our present civilization with our persistent over-work, our peculiar form of government and our exhilarating climate threaten the supremacy of the Anglo-American race and the perpetuity of American institutions. As a substantiation of this somewhat pessimistic conception of our nation's future, allow me to say careful observers have estimated that our nervously-exhausted patients already are greater in number than are soldiers in the army of the Czar. Our great railway systems will soon literally unite this great country in bonds of steel. No longer then will time or space, conservators of the nation's health, be permitted to slow the wheels of commerce. Our telegraphs are said within the last thirty years to have grown to more than half a million miles of wire, and will more than forty times encircle the globe, intensifying in an unparalled degree the facilities as well as the capacity for worry and work of business life. The daily press places before us the joys and sorrows of the entire globe, thus constantly evoking from us our sympathy with or disapproval of the world's heart-life. The wonderful inventions of the age, that quicken the heart-throbs of all our industrial activities, but increase the friction of already too intense toil, and add to the already too great nervous strain the feverish political excitement that sweeps cyclonic-like over our nation every few years, calling forth to the highest possible degree men's hopes and fears, and developing to the utmost their hatred and affection, only to leave hundreds of thousands of both victors and vanquished the thankless heritage of an exhausted nervous system. The supposed conflict

een religion and advanced thought has been known use such intense mental conflict as to change into a ry whiteness the raven locks of early manhood.

ast but not least, we may mention the struggle for an stence, the desire for greater wealth, the attempt to nb higher and achieve greater fame. Is it any wonder, as esult of these incitements to work and worry, that Amer- ans age more quickly or that they become unhorsed in ne battle of life sooner than Europeans. Modern ner- ousness is well said to be the cry of the nervous system truggling with its environment. Emerson, in his Essay on the Gentleman, says that the first pre-requisite is that he be an animal. The observations made by Greek, Ro- man, Arabian and Italian schools, respecting excessive physical exercise, and the maladies incident thereto, according to Richardson, admit of only one interpreta- tion, viz., that such exercise leads to premature decay and early death. Before organic change, however, there occurs a period of functional derangement, which condi- tion, with the influences leading thereto, properly falls within the scope of this essay. The nervous phenomena are the same as those we find in the various forms of func- tional disease. Rowing matches and walking matches are at present the principal causes of physical overstrain and are the influences alluded to. Functional disease may be due to a combination of physical and mental strain, an illustration of which we see in the well equipped and thoroughly drilled citizen-soldiery of our State. "To men already engaged in active out-door pursuits volun- teering," says Richardson, "may be for a time harmless, but to those who are confined within doors all day, violent exertion at drill and on the march after the ordinary work of the day is over is most prejudicial." In the common school system of the day there is too little heed given to Mr. Emerson's advice, and too great strain placed on the nervous system by excessive culture of the intellect.

There is too much pushing and cramming at that period of life when the ganglionic nervous system needs all of its latent force for the successful evolution of a healthy manhood and womanhood. Girls are the principal sufferers at this important epoch. "I have known many girls," says Dr. Emmet, "who commenced their menstrual life free from pain, and in good health, and who did not suffer until after they had begun to impair their nervous system by over-study. Such a perversion of nervous force, this building up of the brain out of season, will always entail a defect of sexual development."

This undermining of the physical health of American girls is a deplorable fact, the evil consequences of which are not sufficiently appreciated. There is too much novel reading, too much lackadaisical study of the arts, too many devotees of an affected æstheticism, and not enough stalwartism of unaffected home-life. "A little learning is a dangerous thing." I have observed a superficial knowledge of painting, of music and persistent reading of sensational literature, with a dwarfed conception of the nobility of labor, and without an aim or purpose in life, tends to produce in persons of a sensitive nervous organization a form of chronic invalidism. Dr. Beard devotes seventy-five pages in his work on nervous exhaustion to enumeration of the symptoms of neurasthenia alone. Any attempt, therefore, upon our part to enter into a detailed account of the symptomatology of these functional diseases would at the present time be simply preposterous. As the pathology of these neuroses is as yet a mooted question, we will accept the opinion of Beard, "that there is an impoverishment of nervous force, resulting from a bad nutrition of the nervous tissues on the metamorphosis of which an evolution of nervous force depends," as being the most satisfactory explanation of the phenomena in question. The diagnosis of functional disease is many times a matter of much difficulty. Of course one must be conversant with

the various forms of structural diseases in order to successfully differentiate them. Both the organic and functional forms of nervous disease have many symptoms in common, and are only able to be distinguished from each other by the fact that in organic disease the symptoms are stable, while in functional trouble they are unstable. The therapeutic endeavor in functional nervous troubles is of the utmost importance. In the past it has been most unsatisfactory. The usual routine form of tonic treatment has been an utter failure. That class of persons we call "rounders" is composed almost exclusively of these nervous patients. Receiving but little benefit from treatment, constantly being chided for allowing their supposed chimerical symptoms to dominate their judgment, is it any wonder that, discouraged and disheartened, they fall an easy prey to charlatans and quacks? Prior to the researches of Beard and his coadjutors, the success in the therapy of past years can all be summed up in the forcible if not elegant lines in which Dr. I. Letsome wrote his own epitaph:

"When people's ill, they comes to I,
I physics, bleeds and sweats them.
Sometimes they live, sometimes they die,
What's that to I, I Letsome (lets 'em)."

We will only consider the treatment of the typical neurosis, neurasthenia. The other varieties need only to be individualized and treated according to the respective needs of each case. Of the greatest importance is the mastery of the physical element that exists in a greater or lesser degree in all of these functional diseases. Without a judicious and well directed moral treatment, the most skillful exhibition of drugs, and the most careful hygiene will prove fruitless. Of course, such causative influences as "carking care," anxiety and worry must by all means be carefully avoided. Cerebral exhaustion, which is of

very frequent occurrence among our over-worked business men, is best treated by persistent galvanization of the brain or superior ganglion of the cervical sympathetic. I have seen such treatment succeed, where rest, change of climate and tonics had signally failed. Great care should be observed in galvanization of the brain, lest fatal syncope ensue. If the essential feature of the case be spinal exhaustion, physical exercise should be forbidden until the patient by proper treatment is enabled to elaborate sufficient nervous force for both locomotion and the various processes of existence. Exercise before this result is obtained can result in evil and evil only. Central galvanization with daily, or upon alternate days, application to the spine, with careful nourishment, is the line of treatment generally followed. If there be headache in the back, as Beard aptly calls it, I have ergotine, or what is perhaps more reliable, Squibb's ext. ergot, given in from three to five grains bis or ter die, to be of especial value. Great good not infrequently results from small blisters about an inch square applied to the sensitive vertebra. The most sensitive will not shrink from this treatment. The blisters should be permitted to remain until they fall off. At first they will slightly increase, but in a few days greatly alleviate the sensitiveness. The irritable spine, so called, I have generally found to be dependent upon uterine diseases, the relief of which, in conjunction with galvanization of the spine or general faradization, will meet the requirements of the case. Spinal irritation, as a symptom of neurasthenia, should be palliated, while the treatment proper is directed to a cure of the neurasthenic state. The irritable ovary can be relieved by the passage of a galvanic current of from 30 to 50 cells through it upon alternate days. Those severe cases of nervous prostration in which both brain and cord are alike seriously affected, are most successfully treated by the milk and rest cure, as suggested by Dr. Mitchell. Massage should

be daily performed by a trained nurse. The patient should be over-fed, the massage taking the place of active exercise. I have substituted galvanism for faradism, as Mitchell directs, with pleasing results. From three to six weeks in bed will generally suffice. For the insomnia generally found in this condition there are no agents equal to galvanism and frequent feeding during the night. I generally keep a pitcher of milk by the patient's bedside, and direct them to drink it as needed. Observation has almost made me a convert to the nutrition theory of sleep. In my experience galvanization is infinitely superior to faradization in the treatment of functional nervous diseases, notwithstanding the statement of Rockwell and Beard to the contrary. Franklinization is now laying claims to the attention of the profession, and there seems to be a great future before it in the treatment of nervous diseases. Small statical machines, with a great deal of tension and but little volume are of but little service, while according to Dr. J. W. Morton, its most ardent advocate, large machines with great volume are productive of the best results. The bromides, chloral, opium and alcohol should seldom be used, since galvanism, careful nutrition and massage will in a more successful manner meet the exigencies of the case.

PRACTICAL MEDICINE.

A. W. ABBOTT, M.D., CHAIRMAN.

Mr. President and Members of the Minnesota State Medical Society:

Your Committee on Practical Medicine would respectfully report that, having decided to make Diphtheria the subject of discussion for this session, they request that the very interesting paper of Dr. Slagle "Upon the Treatment of the Congestive Stage of Pneumonia by Tinct. of Cantharides and Tinct. of Nux Vomica," and of Dr. Pratt upon "Cerebral Softening with Prolonged Somnolence as a Principal Symptom," also one upon a case simulating hystero epilepsy in the male, be referred to the Committee on Publication.

Diphtheria being the subject selected by the Committee for the especial consideration of the Society, the Committee recommends that Drs. Hand, Berry and Dunn be requested to read papers which they have sent to the Committee, and which are hereto annexed, upon the general characters of the disease and the special features of individual epidemics, Drs. Boardman and Graves upon unusual manifestations of the disease, Dr. Abbott upon the manner of contagion, and Drs. Dedolph, Flagg, Gronwold and Abbott upon the treatment.

A. W. ABBOTT, Chairman,
D. A. STEWART,
J. E. BOWERS,
J. W. ANDREWS,
E. J. DAVIS,
Com. on Prac. Med.

ST. PAUL, May 25, 1883.

DR. A. W. ABBOTT, Chairman, Etc.

My Dear Sir: I am sorry to say my experience with diphtheria the past year has been quite extensive, and no treatment yet adopted has proved satisfactory. I have treated about forty cases and have had four deaths.

An epidemic of follicular tonsillitis or "ulcerated sore throat," has prevailed here for six months past, and very many of the cases have been hard to distinguish from diphtheria. The fever runs higher in follicular tonsillitis, and the white pultaceous patches do not extend to the uvula or soft palate. In some cases of diphtheria I have found no excitement of the pulse; and the temperature even below normal from the beginning.

My cases have mostly been among the "better classes," in clean, airy houses, and not confined to any part of the city. They have been spread all over it, rather more in the sparsely settled suburbs, than on the more crowded streets. In a few instances the disease has run through whole families, but usually by exercising constant vigilance it has been confined to the first case. A few adults have taken it and it has been severe with them. I am satisfied it is usually caused by contagion, but do not believe it can be carried in clothing that is freely exposed to the air.

I know of no instance where a physician, exercising proper caution has carried the disease from one house to another.

My plan of treatment is stimulating. Plenty of milk, eggs and beef soup, brandy or wine given freely. Quinine in tonic doses. Tincture ferri, chloride and chlorate of potassa when they can be borne. Sometimes I prefer to give dilute sulphuric acid in water every hour or two hours, or corrosive sublimate in minute doses often repeated. Hot applications outside the throat, and a gargle

or spray of chlorate of potassa, or sulpho carbolate of soda. If the throat feels dry and stiff, apply carbolated sweet oil with a soft pencil, but do not push this local application if is causes pain. Pilocarpine has never given any good result in my practice, and as death so often occurs from heart failure, I consider it a dangerous remedy. I have had no case of membranous croup during the year.

D. W. HAND.

NEW ULM, June 4th, 1883.

A. W. ABBOTT, M. D., Chairman Committee Practical Medicine.

Dear Doctor: For the last year this community has been exempted from that dire scourge, diphtheria; consequently I have nothing new to offer, and can only say that time has confirmed my previously-expressed opinion of its contagiousness. Doctor, when the profession and laity fully realize this proposition and act accordingly, we will not hear of so many of those dreadful epidemics depopulating whole school districts of their young. I speak strongly, Doctor, because for years my whole heart has been engaged in the study of this disease, and I can truly say that, in the majority of instances, success attended my efforts in tracing the poison from house to house, carried there by persons who did not or would not believe in its contagious qualities. In fact, Doctor, by studying the habits, customs, and channels of trade of a given people subject to no quarantine, or at most to an inefficient one, you can almost invariably predict its appearance at a certain point, and at a given time.

Further, the disease is a blood poison, as much so as small pox or scarlatina, and the diphtheritic patch seen in the throat is simply a local manifestation of the poison.

In two autopsies made some two years ago, I found extensive disease in the bowels; in one confined to the transverse and descending colon, in the other to the smaller intestines. Now, in each of these cases there had never been any throat trouble, and the diagnoses were made by exclusion, and the fact that other children were, at the time, sick with diphtheria in the same house.

I have nothing new to suggest in the line of treatment. Regarding it as a blood poison, of course the treatment will be almost exclusively constitutional, and I desire to say right here that I deprecate the practice of eternally *swabbing* that already highly inflamed mucous membrane. As it is usually performed on the frightened, struggling child, it is literally impossible to avoid doing great harm. By forcibly removing the false membrane, and thus tearing or lacerating the mucous tissues, the local poison will be brought into direct contact with the freshened, bleeding surface, and the little patient's life put in great jeopardy from absorption of the virulent local poison. Another fact is patent to every close observer, viz.: tnat there is no surer way to destroy the appetite than to forcibly depress the tongue, thereby causing nausea. I would sincerely suggest to any gentleman who has never tried the experiment that, just before sitting down to his dinner and while very hungry, he forcibly depress his own tongue sufficiently to produce retching, and then see what has become of his appetite; see how much he can eat and digest. He will find that his desire for food has almost entirely disappeared, but he will experience a disgust for it; and what little he does eat will be slow of digestion. If this proposition be true of the healthy adult, how much more severely will it act on the little invalid whose throat is so sore that it is with extreme difficulty the attending nurse can persuade him or her to make the necessary effort to swallow even liquid food. The great secret of success lies in maintaining the strength by judiciously en-

forced liquid alimentation (by rectum when the stomach fails).

Tonics, such as quinine and iron in solution, stimulants as soon as there is any sign of weakness in the heart's action, good light, perfect ventilation, and leaving the throat to take care of itself are the cardinal principles in treating these cases.

Very respectfully,

CHAS. BERRY.

Case 1st.—Mrs. M. A. Berry (my wife), aged 31, returned from a two weeks visit in Cottonwood county, there was no diphtheria there; the night of her arrival nursed a neighbor's child that died as it were almost in her arms. The result was within the next thirty-six hours, violent headache, high fever and general malaise. On the third day diphtheria was fully developed, which ran a severe course and for several days I despaired of success; in fact it is now four years, and she has not fully recovered yet.

Case 2nd.—N. P. and wife of this city, with a small child paid a visit to Sleepy Eye, slept all night in a room where two children had died some six months prior, the third day afterward, their little child sick, seventh day died of malignant diphtheria. no cases in New Ulm at this time, and source of contagion was as above described.

Case 3d.—A Miss Erickson (Norsk), wo... ily in Northfield during an epidemic of d... losing several children. This young lady be... not feeling well returned to her brother A. ... town of Cornish, Sibley county, ... days ... who slept with her, sickened an... son ... throat disease, unattended by a... n. ... two later, Miss Johnsen (the origi... also ... or two later another girl, and later ...

this time I was called professionally, found several cases more sick with a *malignant form of diphtheria*, of which two or three died. The parents and neighbors say that the cases seen by me were identical with those that died previous to my visit.

Remarks.—There was not a case within twenty miles of A. P. Johnsen's house, and the only possible source of contagion, was the importation of it from Northfield.

A Mrs. P., of Golden Gate, assisted her husband's daughter of Lamberton in the care of several cases, the majority proving fatal—returned home, a distance of forty miles, on a cold winter's day, took in her arms her own little children and kissed them; the result was her own children contracted the disease in a malignant form and all died with one exception.

Remarks.—No possible source of contagion except as above stated; there being no diphtheria within a radius of twenty miles.

Doctor, I can multiply these cases almost innumerably; I will give but one more that came under my own observation: In the towns of New Sweden, Bernadotte and Lafayette in Nicollet, and Cornish in Sibley county, the Scandinavian population suffered horribly, many families losing all their children. A lady (Norsk), a Miss Nelson, who had been ease, but fortunately for her had escaped, girl, three months afterward, to a farmer ry Dunwell, living six miles distant. Mr. Dunwell had five children down wife, and two hired men. The wife covered; one child died, and both Errick Errickson), 24 and 20 years

gives a very interesting case that A young lady, Miss P., while ool at Mankato contracted the

disease and died. Her clothing, books and little mementos were packed in a trunk, shipped to Waseca and put in a garret. Months afterwards (I believe nearly one year), this trunk was taken down stairs, the mother called her little flock around her, and distributed to them their dead sister's effects. Result.—*Each and every child present was taken with the disease* within the first week, with one or two deaths. At this time no diphtheria in the county.

Doctor, comments are unnecessary. In one case I traced the contagion to clothing (worn by three deceased children in Norway), which was sent here to a poor brother's children, the recipients contracting the disease and all dying.

STATISTICS OF DIPHTHERIA

In the vicinity of Shakopee, from January 1, 1881, to June 1, 1883.

Since January 1, 1881, there have been in our town and the townships adjoining eight little epidemics of diphtheria, with here and there a sporadic case, aggregating one hundred and four cases, as follows:

In January, 1881, in town of Glendale (six families), eighteen cases with five deaths; in Feb. 1881, in Eden Prairie (one family), four cases with one death; in February, 1882, in Shakopee (three families), five cases with one death; in March, 1882, in Jackson (two families), seven cases with three deaths; in September, 1882, in Shakopee (five families), fifteen cases with eight deaths; in February, 1882, in Spring Lake (two families), five cases with one death; in March, 1883, in Chanhassen (four families), sixteen cases with four deaths; in May, 1883,

in Marystown (three families), fifteen cases with eight deaths; single, isolated cases in different localities, eighteen cases with one death—making a total of one hundred and four cases and twenty-five deaths.

It may be proper to remark that only cases in which the diagnosis was beyond a doubt are included. There were several cases of sore throat occurring at the same times and in the same neighborhoods, and presenting some of the appearances of diphtheria, but without the genuine diphtheritic deposits, which are not enumerated

In the eight epidemics, if I may so term them, first cases could be traced to infection in four instances; the other four seemed to arise without any traceable exposure to previous cases. In each instance, however, subsequent cases could all be traced to exposure to infection. The eighteen sporadic cases were almost without a doubt not due to infection excepting only the one fatal case, which arose from visiting a house where several died thirteen months previously of the disease. The extent, character and location of the diphtheritic membrane was somewhat variable in both fatal and non-fatal cases. In some fatal cases there was but a limited deposit of membrane on the tonsils, but this occurred but two or three times, such cases usually recovering. In some instances the whole mucous tract, nasal, palatine, pharyngeal, tracheal and partially bronchial was covered with a tough, thick, dark-brown membrane. Several large casts were expectorated, one being a complete cast of the trachea down to the pulmonary bronchi. Extensive deposit throughout the nasal passages, which occurred four or five times, was always fatal. The deposit was once noticed on the labia pudendi and once on the palpebral conjunctiva.

In one case of diphtheritic croup with small patches of membrane on tonsils, tracheotomy was performed, but the patient died 36 hours later with deposit of membrane in the wound and in the trachea.

One case of typical membranous croup with no inflammation of fauces, or deposit of membrane on visible parts, died of strangulation on the third day. It occurred in a hotel, where a malignant case of diphtheria had originated a few days before. There was little or no fever in the croup case, and all the mischief appeared to be in the larynx. It appeared entirely different from any of the other cases of diphtheria in so much that I do not wonder that some of the acutest observers should have regarded this as a distinct disease, and yet occurring as it did, I feel sure it originated from the same cause as the diphtheria case in the same house; that owing to the peculiar situation or the local morbid process, and lack of general infection of the system, the same materies morbi gave rise to a train of symptoms so different from those of the other cases as to leave any disinterested observer in doubt whether it could be true diphtheria. It is very noticeable in diphtheria that the site of the diphtheritic deposit markedly affects the rapidity and gravity of the general symptoms. Thus nasal diphtheria is I believe always accompanied with early and alarming constitutional symptoms as if from a peculiar blood poisoning. In cases in which the larynx is alone invaded, the constitutional symptoms are not marked, but the main ones are those arising from interference with respiration. Thus this little patient's larynx, for some inexplicable reason, was the site of the deposit, hence at first he presented little or no fever, or malaise, had only labored crowing respiration, hoarseness and hacking cough. These symptoms gradually increased until inspiration was fearfully labored, aphonia complete, and the surface cyanosed. The brain maddened by deoxygenized and carbonic acid laden blood, he wildly struggled, biting his own hands and those of his attendants, until at last the head, no longer able to force the deoxydized blood through the capillaries, ceased its hopeless struggle, while I ran to get an assistant and

my instruments to perform the too long refused tracheotomy.

In two cases (one fatal) the greatly swollen glands at the angle of the jaw suppurated, were lanced, and large quantities of pus discharged.

The ages ranged from 9 months to 22 years, the great majority being between 5 and 16 years, and the oldest fatal case was 18. Marked paralysis followed only one case. The chief factor in the cause of death was in two cases gradual strangulation. Two dropped down instantly from paralysis of the heart. In the remaining cases it seemed to be asthenia from a peculiar blood poisoning, inability to take food, and in some instances embarrassed respiration and deficient æration of the blood. The duration of disease in fatal cases was from eight hours in one case to four weeks in another, but usually from seven to ten days. Five or six died on the second or third day, about the same number from the twelfth to the sixteenth day, and the others at the end of the first week. The temperature was somewhat variable; occasionally it ran as high as 106° for a few days, but ordinarily not above 102 or 103°, especially in grave cases where constitutional symptoms predominated from the first.

The treatment pursued depended upon the stage and type of the disease.

1. The bowels were opened with calomel at the first visit. 2. Locally, pepsine, tr. of iron, and carbolic acid, and occasionally ice were used. 3. General treatment consisted of tr. chloride of iron, alcohol, beef tea and milk and rectal feeding when stomach refused food. 4. Swollen glands were poulticed with flax seed. 5. When dyspnœa was great, steam, atomized lime water or vapor laden with spirits of turpentine was inhaled. In four cases there seemed to be great benefit from the use of tr. of iron in 20 drop doses every two hours, with early and frequent local application by gargle of a solution of

pepsine, tr. ferri, chlorate of potassa and carbolic acid. However, in most cases treatment seemed to have little effect, for most of the non-fatal cases were those in which I somehow did not much fear a fatal result, although I do not profess to be able to foretell the results of a case of diphtheria with any great certainty.

The seventeen sporadic cases not due to infection all recovered by frequent gargling the throat with pepsine and iron gargle, and hygienic treatment, with iron, alcohol and nourishing liquid diet internally.

I conclude from observation of the disease as it has occurred here—

1. That diphtheria is sometimes very contagious, but that the number of persons predisposed to it is not so great as to some infectious diseases. Many children and most persons over 20 years of age do not take it under ordinary circumstances and exposure.

2. That it is in most cases propagated by contagion, but that very often under favorable circumstances it arises spontaneously, i.e., from causes arising outside the human body.

3. Germs of the disease remain very persistently long after ordinary cleansing of the premises, and I have seen the disease transported in the clothing of one who did not himself take it.

4. The mortality of epidemic diphtheria, though very variable, is always very high. Sporadic cases usually recover. Doubtless mortality is as variable as that of scarlet fever, though I believe it is always much higher. It is the most fatal acute disease met with in this State, excepting only epidemic cerebro-spinal meningitis; more so than unmodified small pox.

5. Membranous croup is only a variety of diphtheria, the marked difference between it and other varieties being due to the location of the invasion, and the lack of absorption and infection of the system.

6. While unhygienic surroundings evidently play an important part in causing the ravages of diphtheria, it is not always so easy as might be imagined to point out just where the fault lies—often severe cases occur under apparently good hygienic conditions. However much soil, water supply, and sewerage may be at fault in cities, I believe in our community defective oxidation, from darkness, dampness and ill-ventilation in dwelling and sleeping rooms and cellars are more often at fault. I have found the worst ravage in comparatively large houses where a certain kind of excessive supposed neatness and saving housewifery prevailed, where great numbers of trinkets, long saved up clothing, bedding, etc., were packed away with scrupulous exactitude, cellars filled with carefully preserved rubbish, and rooms and cellars kept damp and sunless and unventilated year in and year out. A class of people quick to resent any imputation of uncleanliness, and who pride themselves on the excellence of their housekeeping—a class especially often found among our well to-do and excessively saving German citizens.

I believe the above sketch, though perhaps containing nothing new, to be very nearly the exact history of diphtheria since January 1, 1881, in the territory embraced in seven townships (five in Scott county and one each in Hennepin and Carver counties) in which I mostly practice. It was my fortune to attend personally the majority of the cases and by the kindness of my neighboring brethren, Drs. Manson, Lord, Entrup, Lewis and J. B. Dunn, to see or get the facts of all the other cases.

As to theories of causation, while I had neither time nor ability to make critical microscopic investigations of these cases, I may, perhaps, add that the hypothesis of certain vegetable organisms as taught by Pasteur and others explains the phenomena as no other can, and makes clear many of the freaks of the disease that were otherwise inexplicable. Under certain conditions of defective

oxidation harmless micro-organisms become vicious and produce sporadic cases of diphtheria of greater or less severity—under other circumstances still more favorable to the bacterium, the most extreme malignancy is assumed and the disease becomes violently fatal and contagious. Finding an agreeable nidus for cultivation, in some family which to our grosser senses appears clean, but which is to the more delicate tests of hygeia very filthy from the lack of heaven's pure air, sunlight and dryness, the organisms assume their extreme virulence that none can withstand, and a whole family is attacked and destroyed. Under less favoring circumstances to the micro organism only members showing little resistance to the disease are attacked with a smaller death rate. These are but a few of the numberless facts which from a practical point of view irresistably lead one toward a belief in the genuine theory of the disease, despite the disputes and disagreements of theorists, microscopists and pathologists; and to say the least, this view of causation when fully appreciated leads to the only measures of prevention which experience shows to be at all efficient, namely, strict quarantine, antiseptic cleanliness, and a hygienic generosity in air and light, water and food supply.

DR. JAS. H. DUNN,
Shakopee, Minn.

IS IT PROBABLE THAT DIPHTHERIA IS EVER REPRODUCED BY AERIAL GERMS?

1st. It is needless to go into a resume of the experiments made to prove the direct contagiousness of diphtheritic poison, or that the poison remains viable for a long time when dried.

2d. It is beyond question that the poison at least

accompanies the bacteria in the discharges from the diseased localities, as the nose and throat.

The following will illustrate a few of the many ways in which diphtheritic poison may be carried in appreciable amounts to a second individual: The child coughs a portion of the membrane upon the clothing of an attendant; this dries and is carried about for days, weeks, or even months; a person with a moist hand touches the spot and carries away enough of the poison to infect a neighborhood.

A mother, after wiping the nose of a little patient, her hands moist with the ichorous discharge, deposits it upon the knob of the door as she passes out and leaves it there for a neighbor to take up and carry away to her own children.

Cast-off clothing, cloths, table utensils, toys, books, furniture—in fact, any object which we may possibly touch with soiled and poisonous hands, or upon which the discharges may fall, may be the carriers of the contagion. Children in the same house who are carefully quarantined, physicians and nurses who are understandingly careful, are proverbially free from danger of taking the disease.

The course of epidemics may be generally traced along with the channels of travel, and from person to persons who are likely to be thrown together either socially, by business or otherwise.

Is it not probable, therefore, that the carrying of the poison in appreciable amounts from individual to individual may account for the contagion in all cases?

Is there any other theory which will satisfactorily account for the propagation of the disease in otherwise healthy localites?

A. W. ABBOTT.

TWO CASES OF DIPHTHERIA.

C. H. BOARDMAN, M. D.

I was called on the 9th of last September to see a little girl suffering from follicular tonsilitis. The case presented nothing more than we always find in this disorder, and the speedy recovery which ensued would doubtless have been attained as well without the treatment as with it. Just after the child was attacked, a younger brother was found to be affected as she was, but in a less degree; the attack in his case running its course within forty-eight hours.

On the 15th, six days later, I was sent for again, this time to see the youngest child, about three years old. He was not sick enough to be in bed, but was feverish and fretful, with loss of appetite, and was apparently the subject of an acute coryza. In the course of a day or two the nasal discharge became not only profuse, but purulent and more or less bloody; and this, together with the constitutional disturbance, although no membranous patches could be seen, aroused suspicion as to the possible diphtheritic nature of the case. The nose was swollen and inflamed, and the upper lip excoriated from the irritating secretion which bathed it; but the mouth and fauces were entirely free from inflammation. The benefit of the doubt was given to the family and friends; the child was quarantined, the house placarded, and the various precautions taken which are usually adopted in cases of contagious disease. In the course of another day the appearance of a filmy patch upon the free border of the upper lip dispelled doubt, and justified the measures which had been adopted. Soon after this, membranous deposits were found in the anterior nares.

The treatment was by iron and potash, with carbolized wash for the nostrils; and as both general and cardiac debility existed, wine and nourishing food were given.

The case ended in recovery, without the implication in any degree of the buccal or pharyngeal cavities; having pursued its course from first to last as diphtheria of the nares alone.

On October 3rd I saw a little girl, aged between two and three years, who, her parents said, had sore throat. The child had been ailing for two or three days before I visited her. She had a little fever, was irritable, and refused to eat or play; the tonsils were inflamed, but no membrane could be seen, and the sub-maxillary glands were slightly swollen. I made three visits upon as many days, when convalescence seemed established, and I discharged the patient as virtually well.

About two weeks later the father came to me and said that the child, who appeared to have recovered entirely from the attack, was walking awkwardly, as though she d not entire control of her lower limbs; and upon exam- ion it was found that both legs were paretic. This ition rapidly progressed, and in a very short time the and laryngeal muscles became involved; the treat- rychnia and the induced current, opposed no ob- the disorder, and on Nov. 14th, six weeks after t visit, the child died, asphyxiated.

nterest of this case to me was in the appearance of s as a sequence of what seemed to be an sore throat; which, however, the result seems to ed to be diphtheritic, though failing to present ve features of diphtheria.

perience must enter as an element into prog- engender caution in expressing an opinion, us that danger may lurk under the guise niformly regarded as of trifling impor- e diphtheritic virus may effect an en-

trance and accomplish its work without the exhibition of the well-known danger signal.

My experience, aside from these cases, has been only that which is common to all who are called upon to encounter diphtheria; its recital would add nothing to our knowledge of the malady. In one case, death resulted from toxæmia, and in another from implication of the larynx; both cases having been seen by me just before their termination, and both occurring in large families of children, all the rest of whom, though attacked by the disease in varying degrees of severity, recovered. It is scarcely worth while to reaffirm the contagiousness of diphtheria; no additional evidence will convince the skeptical. As regards the etiology of the disease, I think we must wait for further research before we can maintain with confidence that the micrococcus is more than a coincidence.

A Note Upon the Treatment of Diphtheria.

1st. In all severe cases of diphtheria albumen appears in the urine in some period of the disease, and while the amount of albumen is not always in proportion to the severity of the disease, it is so constant and so constantly greater in amount in the severe cases, that it becomes a tolerably reliable means of prognosis.

2d. In many cases the blood disks, epithelial cells and casts of acute desquamative nephritis appear before the albumen, showing that the disease has invaded the renal tissues before the blood change has taken place.

3d. There is no question but that kidney obstruction complicates and renders more dangerous an otherwise mild diphtheria.

4th. A free action of the skin has been noticed repeat-

edly to be followed by an amelioration of throat symptoms and a loosening of the membrane.

5th. In a few cases, where diuretics and diaphoretics have been used freely and to the exclusion of iron, quinine and stimulants, the disease has seemed to have been favorably affected and promptly, and it is the only treatment which has seemed to have any effect whatever in those fatal cases in which it relieved much of the distress, though it did not, of course, stay the septic process.

Is this not an explanation of the action of pilocarpine and many other remedies which have gained repute in this disease?

A. W. ABBOTT.

ST. PAUL, June 5th, 1883.

A. W. ABBOTT, M. D.

Dear Doctor: A detailed account of my cases of diphtheria would not furnish much original matter or vary much from what the profession already have in monographs and articles in the medical journals, and I will only mention one or two points upon which my opinion is positive and following which in practice has seemed to be serviceable.

Believing, as I do, that the disease is at first local, absorption following more or less rapidly, I always insist on thorough disinfection of throat by frequent use of antiseptic solutions in spray, and applied by brush in my own hand, always avoiding caustics or anything that may injure the mucous membrane.

Of late have had a growing disbelief in the value or propriety of tinct. of chloride of iron, so commonly prescribed, and not unfrequently in such heroic doses. Is it not worth while to ask ourselves if, in the first few days of an attack of diphtheria enough can be absorbed to produce the effect of chalybeates on the blood, and ad-

mitting the above, is it desirable to so affect the blood in a disease having a tendency to heart lesions like the one in question, and in which such lesions so frequently are the cause of death? My views on this subject have been confirmed by an able article on sudden heart failure by Bentley Robinson, M. D.

Another error in practice which I have tried to avoid, and I think with good results, has been that of too early employment of stimulants or unnecessarily large doses. Perhaps we make this mistake in many or all diseases tending to asthenia; and my experience has been most gratifying when I have withheld or used them in small doses early in the attack and gradually increased them as symptoms of debility seemed to demand.

I think all will agree that it is not wise to establish a tolerance for stimulants before stimulants are required.

Sincerely yours,

SAMUEL D. FLAGG, M. D.

TRACHEOTOMY.

A. W. ABBOTT, M.D., MINNEAPOLIS.

By reference to the dried injected specimens of the trachea and adjacent parts which I have the honor of bringing before this Society, it will be seen that the important tissues and vessels to be encountered in the operations for opening the respiratory tract between the vocal cords and the upper border of the sternum, are:

1st. The skin, with the superficial fascia, with a variable amount of fat.

2d. One or more of the anterior jugular veins.

3d. The anterior of the layers of fascia which, uniting after enclosing the stemo-mastoid muscles, again divides the anterior, passing in front of the sterno-hyoid and sterno-thyroid muscles.

4th. The sterno-hyoid muscle and the sterno-thyroid muscle.

5th. The posterior layer of the deep or sterno-mastoid fascia.

6th. The thyroid vessels.

7th. The thyroid isthmus and thymus gland.

8th. The laryngeal, laryngo tracheal or tracheal cartilages and intervening membranes.

As these anatomical situations are familiar to all, it will only be worth our while to refer to these points which influence our selection of the site for the operation, together with the normal and abnormal variation in the circulation, which may increase or diminish the amount of danger in operating in certain portions of the median line between the pomum Adami and inter-clavicular notch.

The skin in this region is thin as compared with the other exposed parts of the body. It is thicker in adult males than females. In children there is very little difference, if any, in this respect, between the sexes. The subjacent cellular tissue with its contained fat varies greatly in different individuals, the proportion being very much greater in fat children than in fat adults. The fat is absent or very thin over the crico-thyroid region, growing thicker like the base of a wedge toward the sternum. It will not therefore interfere with a laryngotomy or laryngo tracheotomy while it frequently increases the depth of the wound in tracheotomy one-third of an inch.

The anterior jugular veins vary in position, number and anastomoses. Usually two, passing down from the region of the cricoid cartilage nearly in the median line and then diverging to be continued into the external jugular vein. At times only one is met with and that in the me-

dian line or it may cross diagonally in either direction, the crossing, as we have observed it, generally being in the region of the upper trachea or cricoid regions. These veins may anastomose with the thyroid vessels above and below, and the anastomosing branches may lie in the median line or laterally; when double, the anterior jugulars may have connecting branches, and these branches may be situated above or below the cricoid or in both situations. In this connection we may state that in one dissection made during last winter the inferior thyroid artery crossed in front instead of behind the common carotid and internal jugular, its main trunk coming well to the front of the thyroid isthmus.

The anterior of the two layers of the mastoid fascia, which encapsule the sterno-hyoid and sterno-thyroid muscles, is quite firm and will resist considerably the attempt at tearing by a blunt instrument.

From the fact that the sterno-hyoid muscles are attached above to the median portion of the anterior surface of hyoid bone and below to the outer part of the manubrium of the sternum and inner extremity of the clavicle, it happens that the inner edges of this pair of muscles are closely coapted as low down as the third tracheal ring or lower, then separate and descend with a curve outward to their lower bony attachments. This coaptation is so perfect that there is great danger, as we have witnessed more than once, of dissecting through instead of between the muscles. On the other hand the sterno-thyroid muscles lying behind and external to the sterno-hyoid are attached above near to the posterior border of the alœ of the thyroid cartilage, and below to the central portion of the manubrium, inside of the attachment of the sterno hyoid. The inner edges of this pair of muscles are therefore widely separated above but come quite close to each other a little below the thyroid isthmus. This point therefore, the lower border of the isthnus, is the most favorable for be-

ginning the separation of these muscles, for here there is a small space which is unoccupied by the edge of either.

The posterior layer of the mastoid fascia is not so dense as the anterior, but is always to be seen lying upon the thyroid vessels.

The only artery to be met with in this region is the crico-thyroid branch of the superior thyroid, crossing the crico-thyroid space. The innominate in young children may reach high enough in the pretracheal space to endanger a very low operation. Of the thyroid veins the normal arrangement may be said to be as follows: The superior takes the course of the superior laryngeal and thyroid arteries and empties into the internal jugular, the middle passing also outward to the internal jugular, and the inferior passing downward to the innominate vein of the corresponding side. A plexus of veins crosses the isthmus and there are transverse veins both above this point and below it. There may be a superficial median jugular or two of them. There may be even a plexus of veins upon the trachea itself. Sometimes the veins are collected into a single trunk at the lower border of the thyroid isthmus, which passes directly down upon the trachea. In fact the position and number of the veins is so variable that they cannot be anticipated in an operation, but must be watched for and drawn aside when found. It may be said, however, that the venous branches are much more numerous below than above the isthmus.

The thyroid isthmus occupies a position over the second and third tracheal rings, and may extend much lower. It is very vascular, being especially rich in veins, but is quite movable, so that it can be raised or drawn down a quarter of an inch.

The thymus gland may be found as high as the thyroid, but it is very unusual to encounter it at all, and when found may be depressed.

The prominence of the thyroid cartilage, the crico-thy-

roid space, and the cricoid cartilage can always be felt. The tracheal rings can almost invariably be made out also, but not as distinctly as the foregoing. About ten or twelve rings of the trachea lie above the inter-clavicular notch. The relation of the arytenoid cartilages to the cricoid should not be forgotten.

Bearing in mind these anatomical relations of the parts involved, we may now choose the site for our operation upon this the safest and most scientific basis. Of the three recognized operations, the laryngeal through the crico-thyroid space, the laryngo-tracheal through the cricoid and upper trachea, and the tracheal through the trachea exclusively, the laryngeal presents the following advantages: The crico-thyroid membrane is near the surface and the veins are not large or numerous. The disadvantages are that the tube being placed close up to the vocal cords produces more irritation and coughing than if inserted below. The crico-thyroid artery may be of large size, and if so causes delay in operating, as it must be divided. If the membrane is thick below the larnyx the air will not reach the lungs easily, even after the insertion of the tube in a small trachea.

The operation through the cricoid is not difficult, but presents the, to us, insuperable objection of displacing the fixed point of the crico-arytenoid muscles, thereby relaxing them, which relaxation may become permanent by the filling in of new material between the cut ends of the cartilage, the voice being much modified, and sometimes never completely regained.

The disadvantages of the tracheal operation are the greater depth of the trachea, the size and number of venous branches to be encountered, the presence when it exists of a hypertrophied thyroid and the very rare complication of a high-lying subclavian artery or thyroid gland.

As a temporary aid to other operations about the trachea and larynx, the operation through the crico-

thyroid membrane is undoubtedly the best, but as 95 per cent. of these operations are made to relieve the asphyxia of croup or diphtheria (if we consider them dual), the tracheal operation is undoubtedly the best, as being less irritating, less liable to mar the action of the vocal muscles, and if done according to the method advised by Hamilton, no more liable to the danger of hemorrhage. We shall therefore confine our remarks to tracheotomy proper, based upon the observation of the following cases, all of diphtheria.

NAME.	Age.	Result.	Operation.	REMARKS.
J. A., child, Minn.	15 m.	Died.	L. T.	Died of Broncho Pneumonia
Fred H., Excelsior	6 yrs.	Recov'd.	T.	Supposed to be croup, until paralyzed 2 w'ks after.
— Lahulka, Minnetonka Mills.	4 "	Died.	T.	Neglected unavoidably, after opr. Cause death unkn'wn
Fred Murdock, Murdock.....	8 "	Recov'd.	L. T.	Nearly asphyxiated by valve closure of wound.
Alma H., Richf'ld	20"	Died.	L. T.	Made for enthanasia only, (died in 1 hr.) voice was nearly restored.
Nathan Stubbs, child, Long Lk.	4 "	"	T.	Died of cholera morbus on 3d day after.
Geo. McM., child..	5 "	Recov'd.	T.	
Alma Stubbs, Long Lake.....	5 "	"	T.	Nearly asphyxiated by valve closure of wound.
Whole No. 8.....	.....	4 Deaths. 4 Recov's	5 T. 3 LT.	

So much has been said and written of the necessity of an early operation where it is indicated for croup or diphtheria, that further argument upon this point would be superfluous. One fact, however, is worth all the argument expended upon the subject, viz., that those who

have had the most experience in the operation are invariably in favor of an early opening of the trachea. We may also state that in our own experience and in the examination of the cases of others, we have never seen a resultant pneumonia or capillary bronchitis. It would seem that the pressure upon the pneumonic circulation, the carbonized condition of the blood itself, and the general systemic exhaustion, are far more productive of lung inflammation than an operation which apparently only affords relief. We think also that the amount of moisture furnished by the nasal and pharyngeal mucous membrane has been greatly exaggerated. We have seen, with the laryngoscope, in a case of fairly healthy mucous membrane of the nose and upper throat, a number of brown, dry crusts upon the vocal cords, which could only be dislodged by the use of a very heavy spray. We believe that the passage of the inspired air through the nose and throat is not so much to absorb moisture as to abstract dust and other floating particles, they being caught and held by the tenacious mucus of the parts. The danger from the inhalation of dry air is therefore probably much less than has been supposed.

Taught by the experience afforded by the cases analyzed above, the preferable method of operating seems to be the following:

Place the patient upon a table with the feet toward a well-lighted window. If artificial light is needed, place a lamp on each side of patient. Throw the head slightly backward over edge of table or small, firm pillow; anæsthetize locally, using a hand atomizer with constant spray. The operator then standing directly behind patient makes an incision with scissors one and one-quarter inch in length through the skin and superficial fascia only, from the cricoid cartilage downward. Draw aside the anterior jugular veins, or the deep median if it exists, and then tear apart or incise the deep fascia

with the dry dissectors of Hamilton (bent at right angles ¾ of an inch from their points), separate the edges of the sterno-hyoid and sterno-thyroid muscles and tear the way gently down to the trachea. If the isthmus of the thyroid present draw it upwards. The inferior thyroid veins are to be drawn aside and the yellowish pink trachea will be seen uncovered at the bottom of the wound. Hold the trachea firmly with a tenaculum, being careful not to draw it upwards, and incise with a scalpel the fourth and fifth tracheal rings, or more if necessary. Insert the tube, bearing in mind the great ease with which the tube will pass into the cellular tissue between the trachea and deep fascia. By this method the trachea may be opened in from one to five minutes without the loss of a drachm of blood. The incisions should all be made exactly in the median line in order to avoid making the opening valve-like, which very materially enhances the difficulty of introducing the tube, and renders the patient much more liable to intense dyspnœa or even asphyxia in case the tube is purposely withdrawn or accidentally drops forward. On two occasions in cases which eventually recovered the writer has found a dyspnœa, due to this cause, so intense, that it was at first supposed that the trachea had filled below the opening. Another very dangerous condition was once brought on by the writer drawing the trachea considerably upwards before incising, the result being that when the traction ceased the opening in the trachea dropped below the more external part of the wound and not only made the difficulty of re-introducing the tube much greater, but rendered it necessary each time the tube was taken out to hold the trachea up to place, and this for some days after the period when the inflammatory process usually fills up the inequalities and makes a single smooth opening to the trachea. The tube devised by Durham, of Guy's Hospital, is by far the best

we have used, being easily introduced and capable of being adjusted to the depth of the wound.

The after treatment need not be complex, and, indeed, should be as simple as possible. The general treatment should not go beyond maintaining the strength and keeping the skin and kidneys acting freely. If the disease has invaded the nares and fauces, the local treatment must be continued here.

As to the wound in the neck, we have never seen any part of it in our own cases or those of others, unite by first intention after closure by suture, and in all have the stitches cut more or less. A much neater result is obtained by careful strapping with adhesive plaster after the inflammation begins to subside. A constant spray from a steam atomizer of a mild solution of common salt should play without intermission upon the opening of the tube, a piece of oiled silk made in the form of a bib being placed about the neck to keep the moisture from the clothing. The spray should be used with a view of moistening the muco pus and pseudo membrane (if it has formed below the tube), and not of preventing dry air from reaching the air cells. The spray from a hand atomizer of a mild solution of common salt should be directed into the tube every five minutes for four or five days. This loosens the contents of the trachea and they are thrown out with great relief to the patient, who will, after a little, sleep through the whole process as quietly as in healthy repose. This spray should be continued long enough to throw four or five minims of the condensed solution into the tube. Everything about the patient should be kept in perfect cleanliness and an abundance of pure air supplied. The inner canula should be removed often enough to insure its being kept open and free from membrane and muco pus. The laryngeal opening in the canula is not necessary, for the tube should not small enough in calibre to be mo

trachea; if so, sufficient air will pass the tracheal part of the tube to excite vibrations in the vocal cords or to demonstrate the passage of air through the rima glottidis. The tube should be removed as early as possible and never left in after blood, the evidence of ulceration of the tracheal membrane, has shown itself in the sputa.

We believe there is no operation in the whole domain of surgery which requires such constant attention to details. Of the four cases above cited which recovered, every one had the personal and constant attention of a physician. On the other hand, there is no operation which, if successful, so nearly resembles in its startling beneficence the merciful "talitha cumi" of the Great Healer.

NORWAY, MINN., June 3rd, 1883.

DR. A. W. ABBOTT, Minneapolis, Minn.

Dear Doctor: Your card for the Committee on "Practical Medicine" at hand.

I have not had any cases worth reporting. Of croup I have had no cases.

Of diphtheria I have the last year had about 20 cases, of which three died, but in all these the disease had lasted several days and was fully developed. I found the fluid extract of eucalyptus globulus (Parke, Davis & Co.) to be of good service. I gave it in 20–30 drop doses every 3 to 6 hours, undiluted, or in a little water, not more than a teaspoonful, after previous gargling with a solution of [illegible] in carbolized water. Under the treat- [illegible] patient got more quiet, the throat [illegible] ut short.

[illegible]rs very truly,

CHR. GRONVOLD.

ABOUT DIPHTHERIA.

In regard to diphtheria I will say that as long as the people as well as physicians do not treat the lightest case as strictly as the most malignant one, we can never expect to stamp this plague out. We use vigorous measures to isolate even the lightest varioloid cases and put them in a pest-house, and as long as we do not use the same vigorous measures for even the lightest form of diphtheria, and we have four (4) of them, we will lose more patients from this disease than from any other. Here prophylaxis is everything, and treatment at least unsure. I have followed for 12 years a combined treatment. I give chlorate of potash in large doses, which Dr. Shoemaker of Philadelphia recommended here in the State meeting two years ago as something new. This coincides with Pasteur's (Paris) theory that bacteria do not thrive well in alkaline solutions and die soon. I follow Ranchford's advice (Petersburg), and give plenty of alcoholics, and locally I use a 10 per cent. solution of carbolic acid.

F. DEDOLPH.

PSEUDO-MEMBRANOUS CROUP.

BY WM. GREAVES, M.D.

Minnie F., aged 14 years, complained on the evening of February 12, of hoarseness; commenced to have a harsh cough with noisy respirations and some fever. These symptoms continued for twenty-four hours, when I was sent for to see the patient.

February 13.—Found the face pale; the eyes expressed terror and had an imploring look that it is hard to forget.

The aphonia was almost complete. The perspiration stood in drops on the face and forehead. Temperature normal, pulse 120, and steady. Upon examination could find no false membrane in the throat.

The stethoscope revealed no difficulty with the lungs, but upon placing it upon the larynx a loud inspiratory and expiratory sound was heard. I also observed that the trachea was sensitive to pressure; was not certain whether the laryngeal stenosis was caused by acute laryngitis, attended with swelling of the mucous membrance, or was of a pseudo membranous nature, but feared the latter.

I ordered her to be placed in the vapor arising from slaked lime, and in about two hours to take an emetic of ipecac and mustard; gave quinine in tonic doses, and urged the importance of a nutritious diet of beef tea, milk, eggs, etc., etc.

February 14.—Patient had coughed up some shreds of false membrane since last visit. The dyspnœa unabated; pulse steady and easily compressed; a few moist rales were discovered in the lungs; respiration increased and labored. The cough is less frequent and the aphonia is worse than yesterday. The eyes have a more anxious and imploring look than before. Continued treatment with instructions to keep the patient *constantly* in the vapor of lime water. The membrane coughed up having established the diagnosis of membranous croup, I gave but little hope of the recovery of the patient.

February 15.—The patient had coughed up large quantities of membrane and one or two complete cylindrical moulds of the trachea, in consequence of which she was breathing easier. The pulse was much better but the voice was not quite clear. The emetic discontinued; no other change in treatment.

February 16.—Patient continues to cough up shreds of membrane, but has almost completely recovered from the tracheal stenosis, and the croupous symptoms have

nearly disappeared. The tonic treatment was continued for a week or ten days, and as she had not recovered, the use of her voice, I ordered 1-60 grain of strychnine every four hours. In ten days from the time I first saw her she had entirely recovered.

I report this case on account of the undoubted good results procured from inhalation of lime water. The father of the child, who was constant in his attendance, informed me that the beneficial effects of the lime water inhalations was unmistakable.

W. GREAVES.

MINNEAPOLIS, MINN., May 25th, 1883.

A. W. ABBOTT, M. D., Acting Chairman of Committee on the Practice of Medicine.

My Dear Doctor:

In response to your solicitation for a brief paper on some subject connected with the general practice of medicine, I herewith transmit to your Committee a few suggestions "On the Treatment of the Congestive Stage of Pneumonia by Tinct. Cantharides and Tinct. Nucis Vomicæ," with counter-irritation, etc., and also to indicate a lamentable neglect of proper investigation in the field of therapeutics.

Observing, as everyone long engaged in the general practice of medicine must have often done, that upon the accidental production of strangury, by the absorption of cantharides, when applied to vesicate in pleurisy and pneumonia, the patients have invariably been improved at once in the pneumonic symptoms, I was long ago induced to act upon the hint thus given, and administer small doses of the tincture of cantharis at short intervals, alternating generally with tinct. nucis vomicæ until slight irritation of the urinary organs was produced, and at same time apply a

stimulating poultice of flaxseed meal and mustard, or paint chest with tincture iodine and ammonia, and have uniformly been well satisfied with results. I have no well formed theory of its modus operandi in those cases of rapid hepatization of the lungs where I have witnessed such happy results; I can only state as *facts* from my own oft-repeated observation.

Of course patients will manifest great difference of susceptibility to its action, but by pushing it until its toxical or constitutional effects are manifested in slight irritation of the urinary organs, it will seldom fail to afford immediate amelioration of the pulmonary symptoms.

It is a fact verified by observation that the full therapeutical action of many of our old remedies is yet undetermined, and doubtless many of them have a much wider range of therapeutical value than has generally been supposed. This is eminently so with ergot and quinine. There seems yet to be a demand for some thorough and systematic treatise on the varied action of many of what we are accustomed to call "our old and well tried remedies."

Since 1852, wnen Headland was awarded the Father Gillian gold medal by the Medical Society of London, for his thesis "On the Action of Medicine in the System," or "On the Modes in which Therapeutic Agents Introduced into the Stomach Produce their Peculiar Effects on the Animal Economy," this department of our art has received very little attention, comparatively speaking.

In the fields of surgery, gynæcology, pathology and even etiology there have been great advances made within the last decade or two. But the not less important department of therapeutics has been almost entirely neglected excepting in an empirical way.

We have very few journals published in this department, comparatively speaking, and those consist for the most part of reports of experiments with the various

"new remedies," while the varied and more valuable properties of many of our old therapeutic agents remain incognito. This is an old fallow field the cultivation of which could not fail to yield very valuable results to the medical profession generally.

C. G. SLAGLE.

SLEEPING CHARLIE.

March 26, '83,—Charles Isaacson was received at the City Hospital. At this time patient was able to walk about the ward, but would walk with an uncertain step and in a dazed condition; could not tell how long he had been sick, or where he had been, not much appetite, pulse forty with cold extremities, and did not complain of pain. This condition continued with but little change, excepting that he became more stupid and sleepy, until about the 10th of April, when it was almost impossible to arouse him enough to get him across the room, and when he did walk his eyes would be nearly closed. His breath at this time was so offensive that I could sit by him but a few moments at a time. Pulse was still low, 40 to 50.

April 20th.—The patient could not be aroused, took food when it was placed in his mouth, but his eating was mechanical, did not notice anything. Bowels would move by injection, pulse still slow, respiration rapid, as high as 30.

May 1st.—Patient still sleeping, takes liquid food three or four times a day, breath still very offensive, frothy substance constantly running from his mouth, pulse increased to sixty, but very weak, respiration very rapid, sometimes for two days at a time would be as high as fifty; extremities cold and purple.

May 15th.—Patient very weak, respiration sometimes very heavy and a part of the time scarcely perceptible,

pulse more rapid, from sixty to eighty; the patient looks like a corpse, and judging from appearances can live but a few hours; cannot be made to notice anything, swallows milk, bowels move by injection, water drawn by catheter, extremities still cold and purple, his flesh feels like that of a dead person, and no one not knowing the circumstances, looking at him from across the room would imagine him to be living.

June 1st.—The patient takes a little more food, will take soft bread and milk; pulse a little stronger and respiration nearly normal, extremities still cold, but shows more sign of vitality, and if placed in a reclining position in a chair will remain so, but never moves of his own accord.

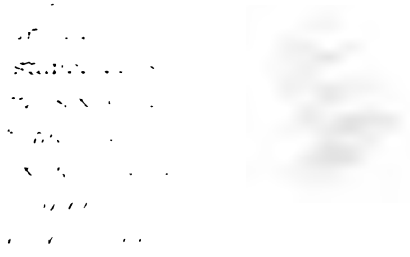
June 15th.—Patient takes more food and a part of the time can hear when spoken to in a loud voice. If a piece of bread is placed in his fingers will sometimes convey it to his mouth, eats quite heartily of bread and milk, sleeps more easily, breathes more regularly, pulse about sixty, looks more like a living being, but does not offer to open his eyes.

July 9.—Patient still sleeping, but shows more signs of consciousness, will eat freely when fed, but does not call for food; has moved in bed a few times, but usually makes no movement of his own accord.

July 15.—Patient still sleeping, can be aroused to take food more naturally, but does not yet call for anything or notice any one, appears to like to have his head rubbed. Extremities warm, pulse natural and temperature nearly normal.

Aug. 1.—Patient still improving, can walk across the room, will occasionally answer a question, appetite excessive, still inclined to sleep most of the time.

Sept. 1.—Patient still improving in physical health but he shows very little signs of natural intelligence. Will sometimes answer a question, but never speaks unless



: of the catheter, five grains of quinine with ten grains Dover's powder were given. He was placed on a ıretic mixture of buchu and spirits of nitre, and in the ırse of six days had recovered sufficiently to be able to ·s his water without difficulty, and returned to work. .as relieved by catheter three times in the first two days, ..t had no spasms after first introduction. He gave a istory of similar attacks, occurring at intervals covering : period of eight years, and that the first one was during nd after a severe attack of cerebro-spinal meningitis. \lso stated that most of the attacks of retention were ıccompanied by convulsions, usually more severe than the one brought on by the passage of the catheter. He remained at work from this time until Jan. 12, '83, when he was taken suddenly with retention, this time accompanied by marked atony of the bladder, severe pains in the region of the kidneys, and much general constitutional disturbance. Reflex excitability was so marked that the slightest touch over the lumbar region would excite convulsions. Convulsions would also come on at intervals without any apparent exciting cause. Severe pain generally immediately preceded an attack. During the next two months it was necessary to pass catheter twice daily. There was marked decrease in quantity of urine, sometimes only four ounces being passed in twenty-four hours. At no time did the urine present a trace of albumen or other sign of inflammatory action of the kidneys. Convulsions during this period were of daily occurrence, and some days would occur at intervals of a few minutes for hours at a time. Patients would lie perfectly quiet and conscious, when suddenly he would complain of severe pain in the lumbar region, his pupils would dilate, the eyes roll upward, the head turn—always to the right side—and be drawn strongly backward, and all muscles of the body be thrown into strong tonic spasm. Occasionally there would be complete opisthotonos, and

always a tendency for the convulsions to take that form. The spasm would last generally about thirty seconds and then suddenly relax. The patient was always perfectly conscious immediately upon the cessation of the spasmodic action. He grew steadily worse under the exhibition of the bromides with hyoscyamus. Stomach became irritable, vomiting was frequent, and neither medicine or nutriment could be retained. The patient was exhausted and death seemed imminent, spasms were almost constant, and the respiratory muscles were becoming implicated to an alarming degree. At this stage morphine in large doses (grains ½ to ¾) was given, first by the rectum and afterwards by the mouth, with the effect of at once lessening the frequency and severity of the spasms. The obstinate constipation of the bowels and irritability of the stomach then yielded to ten grains of calomel, followed by effervescent salines. Nourishment was taken again and improvement was rapid, the exhibition of morphine being kept up to the extent of preventing the convulsions and the pain which always preceded them. In three weeks patient had regained his strength and usual appearance, convulsions and pain had entirely ceased, morphine had been gradually withdrawn, and the use of the catheter was no longer necessary, though there still existed some atony of the musculur stracture of the bladder. The patient has since had two partial relapses; one occasioned by a sudden loud noise which startled him and immediately threw him into convulsions, and the other following a warm bath with a chill after it. In both these instances morphine speedily quieted all symptoms.

The man has the peculiar look of a confirmed epileptic, but has never had a typical epileptic paroxysm He gives no history and presents no evidence of syphilitic taint. There are no signs of disease of the genito-urinary apparatus, other than the atonic condition of the bladder, though during the attacks the morbid reflex excita-

bility seems to center there, and the pain is always referred to that region.

The case seems to present more features in common with recorded cases of hystero-epilepsy than of any other disease.

The beneficial effect of morphine, after the complete failure of the bromides to quiet spasmodic action in this case, is noteworthy.

W. H. PRATT, M. D.
Stillwater, Minn.

EPIDEMIC INFLUENZA.

This disease, which appears so often in this region, has been more than usually troublesome the past year. At times whole families have been affected and it has been the starting point of many serious disorders. Catarrh of the middle ear, conjunctivitis, tonsillitis, both corporeal and follicular, bronchitis and pneumonia have been common results. In the latter part of winter pneumonia of this character was epidemic, and in elderly people was very fatal.

What peculiar property of our atmosphere gives rise to so much influenza, it is interesting to inquire.

From the earliest settlement of the state we find complaints of this annoying disease; and the reports of the medical officers on duty at Fort Snelling, show that it prevailed extensively among the Indians in that vicinity long before white settlers came.

It is not confined to any particular season, and in few cases can it be traced to any unusual exposure or imprudence. That the cause is somewhat allied to the peculiar influence which brings hay fever is probable, but from its prevalence often in the extreme cold weather of this latitude it is certain no vegetable exhalation can have any-

thing to do with it. It is undoubtedly a nervous affection; beyond that we know little.

I have anxiously looked to our meteorological reports; the study of ozone, etc., to get some explanation of this baleful influence, but so far without success.

Yours Truly,

D. W. HAND.

Report of the Committee on Surgery.

C. A. WHEATON, CHAIRMAN.

Mr. President, and Gentlemen of the State Society:

I regret to say that the working force of your Surgical Committee has been seriously crippled by the unavoidable absence from the State of Dr. Geo. D. Wood of Faribault, and by the inability of Dr. Rosser of Brainerd to participate in the report by reason of his official duties in connection with another committee of which he is the chairman. As will be seen by the subjoined papers, a number of gentlemen have liberally responded to our circulars which asked for contributions on surgical subjects. I have written a brief paper on "Railway Shock," and its influence from an operative standpoint. I had hoped that its presentation to the Society would have elicited some discussion, but unfortunately at the time of its reading there was a small attendance and but little was said—I will, however, include it with my report, with the hope that another year will bring about a general discussion of this much abused and long neglected subject.

During the past twelve months five (5) cases of pleural abscess have come under my care, all requiring incision and drainage. I have been much impressed by the greater ease with which such cases are managed when resection of a rib is practiced instead of a simple incision. The operation if done subperiosteally, is effected without injury to the intercostal vessels, insures a sufficiently large opening to admit of the easy reintroduction of the drain-tube, and does not, in my experience, add to the [illegible] the operation of tapping the chest. In my

last case about an inch of the sixth (6th) rib in the posterior axillary line on the right side was removed, a drainage tube inserted and the wound dressed with borated cotton, Lister gauze and McIntosh cloth, after the method recently advocated by Mr. Godlee of London, who says, "if such a case be treated antiseptically it is seldom necessary to wash out the chest." This case was so treated, and the patient made an uninterrupted recovery in six (6) weeks. If the Lister plan when applied to such cases will do away with the dangers and discomforts of daily irrigation, it certainly fully compensates for the time required in its application.

I have used "Henry's" clamp for excision of the scrotum in the treatment of varicocele, in severe cases, with much satisfaction,—in every case but one getting union by first intention through the greater part of the wound. In that one the clamp slipped after the redundant tissue was removed, and before the sutures were applied. Retraction of the dartos took place, and intermediate hemorrhage followed, which seriously threatened the whole scrotum; but after four (4) days of continuous poulticing with hot flannels the clots were evacuated and the swelling subsided and recovery took place, without the loss of more than a square inch of scrotic tissue. In one subject who was possessed of an enormous double variocele, I removed a cross section of both pouches. The wound required twenty-eight (28) sutures to properly approximate its edges. Union was complete on the twelfth day. In six (6) of the seven (7) cases relief from pain followed the operation, and up to the present writing have continued relieved. In one the benefit derived was marked, but after prolonged exertion he still has some pain, which I think is attributable to the removal of too little scrotum. I believe the operation to be simpler, safer and more efficient than any other yet devised for the treatment of this, at times, distressing malady.

In five cases of laryngeal diphtheria, and two of so-called membranous croup, recovery has followed tracheotomy in my hands in but one case, and that recovery followed after the child, a five year old boy, had worn the trachea tube six weeks. Euthanasia inspired the operation in one of the croup cases, and in two of the diphtheria. In these three death was due to blood poisoning and exhaustion—in the remaining three to extension of the disease and occlusion of the trachea below the tube. In all the high operation was done. One of the subjects was twenty-three years of age; the others ranged from two and a half to seven. One of the croup cases survived the operation seven days, and the other thirty-six hours. One of the diphtheria cases died twelve hours after the operation, one in twenty-four, and two on the third day.

The following is a detailed account of what seemed to be a hopeless case, at the time I first saw it:

Epithelioma Involving the Lip, Lower Jaw and Submaxillary Glands.

The patient, a man 52 years of age, was first seen in September, 1882. A year previously, he had noticed a small bunch on the lower lip to the left of the median line. This bunch grew rapidly and soon became an open sore, which had enlarged steadily.

The whole extent of the lip was occupied by an ulcer, whose margins extended downward nearly to the point of the chin and inwards over the gums of the lower incisors. The edges of the ulcer were indurated and everted. A diffused indurated tumor occupied the whole left submaxillary space, extending slightly over the median line to the right. There was abundant purulent discharge from the ulcer. The patient had suffered but little pain. Examination showed the heart, lungs and kidneys to be healthy.

October 4, 1882.—The patient was etherized. The left

common carotid was exposed by incision above the omo-hyoid muscle and a ligature passed under it, but not tied. The external portion of the growth was then surrounded by an incision extending from the angle of the mouth on the right side downwards and to the left along the lower margin of the chin, then upwards to a point about ½ inch external to the angle of the mouth on the left side and inwards to the angle on that side. The second lower bicuspid on the right side was then removed, the alveolar process cut through with forceps, and the jaw divided with a chain saw. An incision was then made on the left cheek, extending from the first incision at the angle of the mouth downwards and backwards to the left angle of the jaw, which was then divided with a chain saw just behind the angle. The muscular attachments of the portion of the jaw included between the two points of division were severed, and the whole piece removed with the external growth. The tumor in the submaxillary space was then dissected out. The hemorrhage was copious but was controlled by ligatures in the wound, and it was not found necessary to tighten the carotid ligature. The flaps were united with hare lip pins, the removal of the jaw allowing them to come together.

The patient made a good recovery, only interrupted by a transient erysipelas about the wound in the neck. The flaps united mostly by first intention. The patient was discharged with wounds healed Oct. 22d, 1882.

July 1st, 1883.—There was a return of the disease at the right angle of the mouth and an indurated mass in the situation of the sublingual and submaxillary glands on the right side. There was no return of the disease on the left side. A second operation was made; the right side of the lower jaw to a joint just behind the angle, the mass in the submaxillary space and a portion of the right cheek being removed.

Aug. 5th, 1883.—Patient was discharged with wounds

healed, except that a small fistula remained in the submaxillary space.

Considering the extent and rapidity of progress of the disease previous to the first operation, the conclusion seems inevitable that life was prolonged by that operation, and the hope seems justified that the second operation may leave the patient in his present comfortable condition for a considerable time.

Railway Shock.

I frequently ask myself, when perusing the details of this or that railway accident, where some poor fellow has sustained a crushed limb which has been vigorously pursued and speedily amputated, How many lives would be prolonged, how much suffering spared unfortunate humanity, and how much the mortality of railway accidents lessened, were we to take more time and analyze more closely the cases, of which there are so many, that fall into our hands, the result of railway mutilation?

The peculiar character and great gravity of "railway shock" reduces the chances of recovery, after a major amputation, to a minimum. We are told by most modern writers in surgery that amputation during the primary period offers the greatest prospect of success; but there are many cases especially of the class we are now discussing, which will have entered the intermediary or inflammatory period before reaction is sufficiently established to offer any probability of benefit accruing by the use of the knife. It is said "the shock of an injury comes and identifies with itself that of the operation promptly performed," but, as Mr. Savory says futher on in his essay on collapse, it is sometimes stated that an operation performed under circumstances when the patient is in a state of extreme collapse does good by arousing the system, on the similia similibus curantur principle; "it is true that it will sometimes produce a temporary display of action,

but be it remembered, always at the expense of that power which is already so much exhausted." And he finishes with the remark, that of all means of exciting action this is the least economical. I can conceive of no more inappropriate subject for the practical application of such philosophy than he who has been subjected to the frightful violence of railway accident.

In volume II of Agnew's Surgery, page 332, we find the following table, showing from 444 fatal cases of amputation, the percentage of deaths referred to chief causes. Of the primary amputations—

18.5 per cent. died from shock, collapse and exhaustion.
10.5 per cent. died from pyemia and septicemia.
2.6 per cent died from secondary and recurrent hemorrhage and gangrene.

In the secondary amputation—

5.2 per cent. died from shock, collapse and exhaustion.
9.3 per cent. died from pyemia and septicemia.
2.6 per cent. died from secondary and recurrent hemorrhage and gangrene.

In comparing primary and secondary amputation from these figures, we see a very strong argument in favor of the secondary operation. A careful study of statistics, gleaned from this special field of surgery, will of course be the only way of settling this point with even an approximate degree of accuracy, and such statistics are not to be had.

From the foregoing table it is seen that shock and collapse are responsible for nearly twice as many deaths as from any other one cause, and this too in a list of amputations not selected with reference to the character of the violence which renders the operation necessary. It would, therefore, seem rational, from the very nature of the railroad injury, that we should find a still larger percentage of deaths from shock than the above figures would indicate.

In conversation some time since with a "railway surgeon" of wide experience and keen observation, he said to me, "Doctor, I believe we are all of us in too much of a hurry to operate. I can recall cases where I am confident death was hastened by the operation, and where I believe, had they been left until the secondary period, a recovery might have been looked for." He also remarked, "that in the majority of the cases where he had operated before reaction was thoroughly established and recovery had taken place, the convalescence was protracted. The stumps did badly; there was more sloughing; they were more indolent and irritable; and the unfavorable impress of too early interference was manifest all through the case." Opinions like these, coming from such a source, have much weight, and should stimulate a more careful weighing of probabilities before we take the step which cannot be retraced.

How does the shock produced by a railway accident, and that produced by any other mode of violence differ? Mr. Page, in his recent work on injuries of the spine and spinal cord, thus defines shock: "We are all familiar with the true 'shock' as synomyous with the 'collapse' which is a concomitant of all profound and sudden injuries, whether inflicted upon the head or some other part of the body, and this collapse we are wont to regard as the immediate expression of lessened or annihilated function of the great nerve centers which preside over the vascular system, paresis of the heart and of the peripheral parts of the circulation being the essential factor in inducing the pallor and coldness which affect the whole surface of the body, and the mental enfeeblement which is due to the impaired flow of blood within the brain." "The slow, feeble or almost annihilated pulse, the pallor of the lips and coldness of the extremities, the mental hebetude, the anæsthesia of the surface, the relaxation of the sphincter, the secretion of urine, the impaired muscular action, each and all are dependent in varying degrees on the paresis

of the heart and vascular system, and on the impression upon the whole nervous system, of which that is the first and most immediate result." And again he says, in quoting from the essay on "shock" by Mr. Furneaux Jordan, "the degree of enfeeblement of the action of the heart will serve as a fair index of the reduction of vitality generally." To arrive at the relative degree of severity of "shock" as produced in different ways, he says: "Compare two cases of like injury, the one recived by accident on a railway, and the other by being knocked down and run over in the street, and the probabilities are great that the manifestation of 'shock' will in the former case be more extreme than in the latter; and the difference lies in this, that in the one case there is an element of great fear and alarm, which has perhaps been altogether absent from what may be called the less formidable and less terrible mode of accident." The principal feature in railway injuries, says Mr. Furneaux Jordan, "is the combination of the psychical and corporeal elements in the causation of shock, in such a manner that the former or psychical element is always present in its most intense and violent form. All that the most powerful impression on the nervous system can effect is effected in a railway accident. and this quite irrespectively of the extent or importance of the bodily injury." How largely fright itself may conduce to the condition recognized as shock, is well shown in the case of a railway servant who had had his foot run over, as was supposed, and was in a state of collapse when seen by his attendant, who found the injury confined to the heel of the boot, " which had been dextrously removed by the wheels of a passing engine."

It will thus be seen that in railway injuries certain elements are present, which are independent of the local injury, and which do seriously compromise the lives of many victims so injured. Again, to quote from Mr. Page, he says: "It is a seemingly anomalous and most

noteworthy fact that the collapse which in these railway accidents accompanies serious bodily injury, such as severe laceration of limb or fracture of bone, always excepting the collapse from severe concussion of the brain, is not followed or is indeed rarely followed by the train of after symptoms indicative of general nervous shock."

That the greater the contending forces which produce the injury, as a rule, the more profound the shock, and the more profound the shock the slower the reaction, are facts established by both experience and observation, and in the field we are now discussing we certainly find a greater percentage of cases where profound shock is the conspicuous element which compromises life, than in any other.

After this brief review of some of the more important features of railway shock, it occurs to me that too careful an analysis of our cases cannot be made; that too little time is given for reaction, and too often are we tempted to adopt that, to me, pernicious philosophy which teaches that shock added to shock is *ever* a conservative measure.

The length of the primary period ranges from six (6) to thirty (30) hours, but if after the lapse of thirty (30) hours our patient has not reacted sufficiently to offer a reasonable probability of recovery from the operation, it certainly should not be performed.

I cannot but believe that if this advice were followed, we would be spared the almost daily press notice of death of this or that unfortunate who was crushed by the cars and survived the operation only a few hours. I am heartily in accord with one of my professional friends who facetiously remarked that if a patient died within forty-eight (48) hours of an amputation, he ought to have met with his demise before the operation was made.

C. A. WHEATON,
Chairman Surgical Committee.

PISTOL SHOT THROUGH THE STOMACH AND KIDNEY.—RECOVERY.

BY FRANKLIN STAPLES, M. D.

James McHugh, a strong muscular man, aged about thirty, in a disturbance in a saloon at Lewiston, Minn., on Jan. 8th, 1883, received two pistol shots. The balls were large sized conical balls. One shot was received in the front of the right arm, a little above the elbow joint, and passed superficially upwards and inwards and lodged beneath the skin on the inner side of the arm, about four and a half inches from the point of entrance. It was easily removed and its wound was unimportant.

The other ball entered the body between the sixth and seventh ribs on the left side, three and one-fourth inches to the left of the median line and three inches below the left nipple. It was found in the left lumbar region and was removed through a deep incision made three inches to the left of the centre of the spinal column and immediately below the lower border of the last rib. This ball, in its passage, barely avoided the lower margin of the left lung, passed through the diaphragm, then directly through the stomach, through, or in such proximity, as to wound the upper end of the left kidney, then through the lumbar muscles to the skin at the point above indicated. This ball must have perforated the peritoneum at least four times.

The patient was seen and the balls removed about four hours after the shooting. The ball in the lumbar region, although it had passed through to the skin on the back, as was shown by a red spot which served as a guide for the incision, yet, at the time of the operation for removal, it was found within the lumbar muscles nearly the length of

the finger, and was removed with some difficulty. A free opening was made, a carbolized tent left in the wound, and an opiate given. The subsequent history of the case was given to me only in a verbal report some time afterwards. Between the time of receiving the shots and the removal of the balls, the patient had vomited blood three or four times. He continued to do this at irregular intervals for two or three days. The next morning after the shooting he passed a large quantity of blood at stool. The abdomen is said to have become somewhat tympanitic and tender. The evacuations from the bowels contained blood for five or six days. Every evacuation of urine for the same length of time showed a large proportion of blood. At the time of the removal of the balls there was some, though not great prostration. I did not get the subsequent history of the case in any definite form. I only know that notwithstanding unfavorable circumstances for good care, and some careless exposure on his own part, he made a rapid recovery.

The ball, in its passage through the abdomen, did not take any circuitous route, but passed directly through the organs mentioned, and was removed from within the muscular walls of the lumbar region at the point described. The accompanying photographs show the points of entrance and exit of the balls.

REPORT OF A SUCCESSFUL OVARIOTOMY.

BY F. A. DUNSMOOR, M. D.

I wish to report to our Society a successful ovariotomy which I made at the Minnesota College Hospital, with the assistance of the hospital staff, in the presence of the graduating class, and Drs. Owens and Wheaton of St. Paul.

The patient was sent me by Dr. Lindly, of Perham, October 21st, 1882, and admitted to the hospital on that date. The following is the history of the case taken by the interne on her admission:

Mrs. C. M., Finlander, married house-wife, father and mother living; father confined to bed for past ten years with paralysis, four brothers and one sister died in early childhood, three brothers and one sister living. All healthy except oldest, who has some lung disease.

Patient ceased menstruating June last, since which time has been confined to bed. Five years married. Has two children, four and two years of age. Never was ill until about one year ago. Noticed then, a small tumor growing in right side of abdomen. Has been troubled much with eructation of fluids and gas during and previous to this time. Tumor was at first movable. Had some pain in epigastrium, but not severe. Eructations increased since last June. Appetite quite good. Diarrhœa for past two weeks. The immense size and weight of the abdomen prevented the patient from standing or sitting, but is comfortable lying on left side. Veins very much distended, especially over upper part of abdomen. Fluctuation of tumor over upper and anterior parts only.

Vaginal examination showed the uterus to be smaller than normal, and free from adhesions. Chest sounds intensified.

The tumor occupied entire abdominal space, pushing up above the ribs and below the pelvis, projecting several inches below pubes, exact measurement not taken.

Operation to remove tumor began at 10:20 A. M., Nov. 5th. Patient etherized and on table with pulse one hundred and twenty and temperature ninety-eight and one-half degrees. Room heated to ninety degrees. Operation made under spray of two and one-half per cent sol. carbolic acid.

An incision was made in linea alba, about six inches in length equi distant from umbilicus and pubes, carried directly down to the sack, the distention being so great as to make the separation between the recti muscles complete without any intervening tendons.

The peritoneum which was very thin was immediately opened and the sack of the tumor presented the usual pearly appearance, and proved to be multilocular. A trocar was introduced, but the fluid was too gelatinous to discharge through it, so the patient was turned on her side, the sack incised and the contents allowed to escape upon the rubber cloth leading to the tub under the table. The hand was introduced through the opening in the first cyst breaking down rapidly as possible the neighboring walls of the surrounding cysts, until the entire contents of the seemingly numberless sacks were emptied. The cysts varying greatly in size and in condition of contents, but without pus, were adherent anteriorly to the peritoneum. These adhesions were easily broken down with scarcely any hemorrhage. The tumor was now carefully drawn outside the abdominal walls, and the pedicle which was about two inches broad and two and one-half in length exposed.

There were three large blood vessels supplying the tumor about three-fourths of an inch apart, standing out distinctly before the pedicle, and these only were ligated with heavy silken ligatures, the entire pedicle then divided

and dropped back without further treatment. The entire abdominal cavity was sponged dry with sponge wrung out of a hot two and one-half per cent. solution of carbolic acid. After sponging, the flaps were brought together, and the air wholly expelled from within the peritoneal sack. In this procedure I was much surprised at the amount of air left under the walls after they were allowed to fall back upon the viscera. Repeated manipulations by pressure from above downwards expelled a large amount when the appearance indicated none present.

The wound was closed with silver sutures, dry dressings, protective, carbolic gauze, cotton, compress and close bandages. The patient put to bed with hot wraps and bottles of hot water around her to maintain a proper heat. Patient under ether sixty-five minutes. Soon after opening the peritoneum the patient showed signs of collapse, which was overcome by elevating limbs, applying hot bottles and hypodermics of brandy. A hypodermic of one-fourth gr. of morphia dissolved in whisky was given and absolutely no further medical treatment until after the twentieth day, when there was a rise of temperature following our refusing to let her go home.

No food given for two days, then liquid food, chiefly milk, with solid food gradually added, the patient frequently complaining of hunger.

Sutures removed on seventh day, union complete internally and except about one-half an inch externally, where there had not been perfect approximation of the cut surfaces of the flaps.

The sack of the tumor weighed ten and one-fourth pounds, contents weighed forty-six pounds, aside from the fluid which was absorbed by the blankets from not being properly directed by the rubber cloth into the tub, and a large amount was spilled by the attendants by attempting to move the operating table nearer the bed, not noticing the tub under it. The tub was nearly tipped over and

about a gallon of fluid poured upon the floor, which we believe would make the entire weight fully sixty pounds.

The patient is now completely recovered and returned home December 4th. She weighed at this date, fully dressed, just one hundred pounds, and appears proud of her waist.

THE TREATMENT OF WOUNDS, WITH ESPECIAL REFERENCE TO THE ASEPTIC METHOD OF MR. LISTER.

CHARLES H. HUNTER, M. D.

What shall we do with wounds? is the question which surgeons of each century have asked, discussed and reanswered, still quite as unsatisfactorily. In our own time the whole world stands agog at the clash of contending systems. This uncertainty was inevitable so long as all our steps were empirical. Now that we are getting at some of the biological and chemical facts of inflammation and wound infection, we may fairly hope that more precision may characterize our answers to the problem. Rather than loiter in these wearisome discussions of the past, we will briefly analyze the various methods in vogue before Mr. Lister's time, but devote the greater part of our essay to a detailed description and consideration of his method.

All the multitudinous ways of dealing with wounds, can, for the convenience of study, be divided into two classes.

First—Treatment by closure of the wound.

Second—Treatment by exposure, the so-called "open method."

The first was the favorite method with surgeons of the last century. The rapidity with which simple incised wounds, particularly those of the face, heal when quickly and completely closed, led to various devices for securing the same happy results in wounds that would have to heal by granulating. These attempts led to scabbing the wound, "smothering it," as it was called, to making a covering of cotton soaked in blood, as was the favorite practice of Sir Astley Cooper. They also led to the application of various balsams and ointments, containing the volatile oils, or coal tar, much in vogue among French surgeons at the beginning of this century. But, as all simple incised wounds will not always heal by first intention, however carefully closed, so it was found that scabbing did not always go on as desired, if the wound was never so carefully smothered. In fact, so much trouble was occasioned by the collecting and fermentation of fluids under the scab or tight dressings, that Syme wittily remarked that the sealing up of a wound is the best method of keeping it open. The bad results of these various devices, long-continued suppuration, and frequent loss of patients from pyæmia, led to the adoption of a directly opposite plan—the open method.

This method was first systematically applied in the treatment of wounds, by a surgeon at Vienna in the '50s. By this plan, so far from covering the wounds, either with ointment or dressings, it is left quite open to the air, not even stitches are used to close it. A stump, for example, after hemorrhage ceases, is supported in an easy position on pillows covered with some impervious cloth in such a manner that all the discharges can freely drain from the neighborhood of the wound. Perfect rest, drainage, and cleanliness are relied upon to bring about a good result. Though this method has never been generally adopted, the results on the whole seem to have been better than those obtained by occlusion. For example, in

amputations where there had been a mortality of 51%, by the open method it fell to 20%. A modification of the open method, practiced at Zurich, confirmed what was only slowly becoming apparent, that nature alone does the healing. Heretofore all applications were made with the view of actively aiding the process of repair. Relics of this idea are still apparent in the language of the laity. The favorite ointment of one, we hear, makes the wound heal, the liniment of another is very healing, etc. While the truth is, the greatest good any applicatian can do to a fresh wound is to keep out injurious foreign substances. The tissues themselves do the repairing.

A modification of the open method which effectually carries away the discharges and other extraneous matter, is the method of irrigation. This is a favorite method in the Paris hospitals, where Mr. Lister's method is scarcely at all practiced. It gives very happy results, especially in cases of gangrene, or lacerated or contused wounds of the extremities, the current of water removing matter that would otherwise soon become offensive. There is no virtue in water itself to prevent fermentation. Some germicide must be added to obtain this result, either carbolic acid, corrosive sublimate, boracic acid, iodine, etc. The latter 1–30 is preferred by Mr. Bryant as being less irritating to the skin and wound. We now know that this is the explanation of the good results following the use of the balsams, volatile oils, coal tar and like substances, by French surgeons at the beginning of the century, previously alluded to. They are all germicidal substances, preventing fermentation in the wound or the discharges. Nelaton used alcohol, which is, of course, one of the most perfect antiseptics. Coal tar, containing carbolic acid, would also be a good antiseptic. As soon as this fact was discovered, Lemaire used the acid instead of the tar. He, moreover, taught in the '60s that putrefaction is due to germs, and that carbolic dressings are useful because

of their destructive power over them. Lemaire thus became the forerunner of Lister in two particulars. Good results were observed to follow all these dressings. Their application, however, was carried out in a way so desultory, and the principle of their action so ill understood, that no generally accepted system of treatment came of their use. Indeed, no intelligent use could be made of them, so long as the old theories as to the causes of putrefaction in wounds held sway. These theories were, first, that of the spontaneous generation of the nocuous material in the wound; second, that of the putrefactive power of certain gases in the air. This last belief led to the fruitless efforts to prevent putrefaction by pumping out the air from around the wound. It remained for the experiments of Pasteur to explode these notions and to establish to demonstration that the injurious material is a germ entering the wound and there fructifying.

How he did this, and how this principle once established led Mr. Lister to devise means successfully to keep these germs out, is now a matter of history. This brings us to the real subject of this paper, viz., an exposition of Listerism, and the Listerian method of treating wounds.

First, a few definitions. What is meant by Listerism and the Listerian method? The great principle enunciated by Mr. Lister is this. The cause of fermentation in wounds is the entrance into them of particles from the outer world, and to abolish the risks due to fermentation, the entrance of these particles must be prevented. Synonymous with Listerism is asepticism, non-septicism. This is the doctrine. The best known method of effectually applying this principle, is the Listerian or aseptic method, presently to be detailed. The method may change, for all methods are susceptible of improvement, but the law remains, for it rests on proof demonstrated over and over again by widely separated observers.

The term antiseptic treatment should be reserved for

another method. That in which all the precautions insisted on by Mr. Lister are not observed, the wound becomes septic, and is treated with medicated injections directed against the septic material in the wound. Wounds treated strictly according to the Listerian method do not become septic, therefore the method is not antiseptic, but rather aseptic.

In this connection it is worth while to remember one other thing. This law, that fermentation in wounds is due to particles from outside, has nothing to do with the theory that all infectious diseases are due each to its particular germ. This may or may not be true. It in nowise affects the truth of Mr. Lister's law.

Let us now look on at an operation as performed by Lister at King's College Hospital. The following materials have been prepared beforehand: Carbolic lotions of the strength of 1–40 and 1–20. All instruments have been soaking in the latter solution for an hour or more. Enough must be used to cover all parts of the instruments. The sponges are washed in the 1–40 solution. After each operation sponges are washed in hot water, and placed in 1–20 carbolic solution till the next operation. A basin containing 1–40 solution for washing the sponges; a second basin containing the same, in which the operator may rinse his hands during the operation; cat-gut, silk and silver for sutures and ligatures, lead buttons and drainage tubes of rubber, all of which have been in the carbolic lotion. Protective gauze and Mackintosh also in the lotion; some dry gauze and bandages, both muslin and elastic. The Professor and his assistants first wash the hands in the 1–40 lotion thoroughly, but if the operation is on a joint, then in the 1–20 lotion. Dirty fingers and finger nails are quite as dangerous here as in obstetrics. The parts about the field of operation are washed and soaked in 1–20 lotion, and shaved. Rubber cloths are so arranged as to prevent the soiling of the patient's clothes, and these

are covered with towels wrung out of the 1-20 solution, so that no instrument or hand may inadvertently come in contact with anything not thoroughly aseptic. The spray, which is given in charge of a special assistant, is now turned on the field of operation and the cutting begins. All instruments or sponges handed the Professor must reach him through the lotion and the spray. All contact of non-carbolized objects with the wound must be absolutely prohibited. Bleeding vessels are tied with cat gut, and the ligatures cut short. The operation completed, the drainage tubes, which should always be large rather than small, are placed, and the wound if superficial and small closed with carbolized silk, but if large and deep, by silver wire passed well away from the edges of the wound, deep into the tissues and fastened at either end by means of lead buttons, in order to obliterate any cavities. Between these button stitches silver wire may be used to relieve the skin still farther from tension, the skin itself being stitched with silk or hair. To protect the cut surface from the irritation of the carbolic acid, a piece of protective is laid over the wound just covering its edges. Over this, a layer of gauze wetted in the 1–40 lotion, overlapping it well in all directions. Still other layers of dry gauze are put on, so that the discharges may not soak through. Outside of these is placed a piece of well carbolized Mackintosh, with the rubber side inwards. To prevent displacement of the dressings, the edges should be fastened down by an *elastic bandage*. Outside of all, a common roller is placed. Of all these dressings, Mr. Lister considers the button stitch to obliterate all cavities, and the elastic bandage to hold down the edges of the Mackintosh, as highly important. All these precautions must be strictly observed at every dressing of the wound, which need not take place oftener than once in two to four days. The tubes must be removed, cleaned and put back, and the wound syringed out with the 1–20

solution, *if needful*. The indiscriminate squirting of carbolic acid is not Listerism. When the wound has become superficial, the spray and gauze dressings may be discarded, and the surface covered with boracic ointment spread on lint.

This, then, is the Listerian method of treating fresh wounds; it is nothing more, nothing less. Old wounds and fistulæ must first be made fresh by scraping and cutting, when they are treated the same way.

The essentials of the method are an aseptic condition of the part to be operated upon, of the operator and his instruments, and of all things that come in contact with the wound from the beginning to the end. All must be scrubbed in carbolic acid as faithfully as a Philadelphia housekeeper scrubs her door step with suds. Neither the spray nor the gauze make the method. A dirty finger or knife is much more dangerous than the absence of both. Mr. Lister himself says of the spray: "We know there are nocuous particles in the air, though they may be few." The most convenient way to keep them out that I yet know of is the spray. Many Continental operators, as Billroth, do not, however, use it, preferring to have a current of carbolic acid run over the field of operation. Others operate quickly, and then wash with carbolic acid.

Here, then, we have a third method of treatment of wounds. Though the wound is certainly closed, it is done in so definite a way, carrying out a clearly recognized principle, that it is fairly entitled to be called a separate system.

We shall best appreciate the relative merits and demerits of these systems if we have clearly in mind the indications to be fulfilled. These indications have been admirably summarized by Mr. Bryant, as follows:

1. To cleanse the wound.
2. To arrest all bleeding.
3. To effect coaptation of the cut surfaces.

4. To maintain immobility of the parts.

5. Drainage.

6. To exclude such outside influences as may be prejudicial to healing.

Tried by this standard, we see that occlusion fulfills the first, second, third and fourth, the sixth only after occlusion has been established. For the fifth, drainage, the most essential of all, no provision whatever is made. It is just for this reason, as we have seen, that it is the most dangerous of all methods. The open method fulfills the first and the second indications, cleansing and arrest of hemorrhage. The third and fourth, coaptation and immobility, are not fulfilled. More or less perfect provision is made for the fifth indication, drainage, while the sixth, exclusion of foreign substances, is not at all provided for. The ill effects of contact of nocuous substances is, however, more than neutralized by the free access of oxygen. Pasteur has shown that putrefactive germs do not thrive in the presence of oxygen; no more can they live in a thick crust of lymph serum and blood which quickly forms on the surface of an exposed wound. These two facts go a great way towards explaining why a system differing so widely from the aseptic succeeds fairly well. The open method is nearly antiseptic.

The Listerian or aseptic method fulfills the following indications: The first and the second, cleansing and hemorrhage; the second particularly well, for by the use of cat-gut, which is soon absorbed, no irritating substance is left in the wound. The third, coaptation, is fulfilled perfectly by the deep button stitches; as is also the fourth, immobility, by the firm stitches and the firm dressings. The fifth, drainage, the most important indication of all, is specially provided for by the system of tubes; while the sixth and last, the exclusion of foreign nocuous substances, is provided for from the very beginning of the operation. Thus we should expect from a priori reasoning aseptic

method of treating wounds would give us the best results. Does it actually do so in practice? This is, of course, the mooted question. Better results can show themselves in various ways. By less time in healing, consequently less exhaustion of the patient, so that operations can be undertaken in an otherwise unsuitable class of patients. By preventing the frequent complications of wounds, such as erysipelas, septicæmia, etc., and by rendering possible operations that could not otherwise be undertaken on account of danger to life.

As to the first point, I have gathered no statistics, but simply give the impression, gained by frequenting Mr. Lister's wards, that the wounds presented much *less continued* exhausting suppuration, and a much nicer, neater appearance every way than were to be seen in the wards of neighboring hospitals. Indeed, I do not remember to have seen one suppurating wound in the Lister wards.

As to the second point, Mr. Lister's Glasgow statistics show a diminution of mortality from 45 to 15 per cent. with the aseptic method. In Edinburgh he had four times as many deaths in cases treated septically, as in those treated aseptically. Volkmann was about to close his hospital in Halle, on account of pyæmia and allied diseases, when he began to operate aseptically as a last resort. As all the world knows, he did not close his hospital, but is a most enthusiastic supporter of aseptic methods. Not long ago he reported seventy-three compound fractures, and twenty-four operations on joints, with no deaths. Prof. Nussbaum at Munich was in a similar predicament, on account of an epidemic of erysipelas in his hospital. He now has no erysipelas, and goes so far as to say the fate of a patient seriously wounded is almost entirely in the hands of the surgeon, who applies the first dressing. Not to mention the opening of joints, the perfect safety with which crooked rachitic bones can be broken and straightened aseptically,

proves that operations rightly considered fatal by other methods, can be done with impunity by this.

To show the good and often brilliant results obtained by the Listerian method, I cannot do better than to give the resume of severe cases treated aseptically by Dr. Simes of Philadelphia, and recently reported in the Medical Times. When he began his service, things were going so badly on account of erysipelas, septicæmia and suppuration, that he decided something must be done. The hygienic conditions remained the same, as did also the bad state of affairs in the other wards of the hospital. He summarized the results as follows: 1. No pain. 2. No traumatic fever. 3. Aspect of wound was better, no redress or œdema. 4. No tenderness. 5. Shorter time for healing

My own cases treated in this way will be reported at another time. Suffice it to say that my success in preventing suppuration has been in proportion to the care exercised in adjusting the dressings. Where suppuration has occurred, I have been able to discover an adequate cause.

A great deal has been and is being written in the journals about the aseptic method, but for the most part in so condensed or inaccurate a form that it is difficult for one to grasp the significance of all the details. There is a good, short book on the subject, translated from the French, by Dr. Gerrish of Portland, Me. Another good book, larger than this, is one by Sir William McCormack. The second volume of the International Encyclopedia of Surgery contains a concise statement of the method by Dr. Cheyne, Prof. Lister's assistant at King's College Hospital. Dr. Cheyne's own book, however, on Antiseptic Surgery, contains undoubtedly the most satisfactory treatment of the whole subject. To one not previously initiated in the method, Mr. Cheyne's book will prove an inspiring guide. From it he will learn the significance

and value of attending to "little things." No surgeon, I am convinced, will succeed in Listerism who does not undertake his work with the enthusiasm of conviction, and with a determination to carry out to the uttermost all the minutiæ. The objections to the method, on the score of fussiness, disappear when we consider the lessened frequency and shortened duration of the dressings. That other objection, that though all very well in old and crowded hospitals, there is no need of such care in the pure atmosphere of the Northwest, will be much more cogent when surgeons cease to report deaths from long-continued suppurations, erysipelas, pyæmia and allied diseases.

STILLWATER, MINN., May 21, 1883.

C. A. WHEATON, M. D., Chr. Com. on Surgery:

Dear Doctor: Enclosed I send you a sketch of a few of the more important operations occurring in my practice during the past year. Hoping they may be of service to you in the elaboration of your report, and of some interest to the members of the Society.

Fraternally yours,

P. H. MILLARD.

TRACHEOTOMY.

In this operation I have to present four cases only, resulting in recovery in two instances, and death in two instances.

Case 1.—Male child about eight years old, a victim of membranous croup. Upon consultation, as the child's death was deemed certain, tracheotomy was decided upon as a last resort. Child in fair condition, strength good, circulation fair and no great collapse of lung lobules.

A good case for operation. Chloroform used as an anæsthetic. Made incision through the two upper tracheal rings. During and immediately after the operation the child became asphyxiated and required hypodermic injections of cardiac stimulants and the performance of artificial respiration. The latter was necessitated for nearly an hour. After much trouble in the after treatment the child finally recovered, though to the present day obliged to wear the tube. An interesting point in this case was a congenital aphonia due to some obscure cause, possibly syphilitic.

Case 2.—Operation July 28, 1882. Case of diphtheritic croup, male child aged four years. Seen first a few hours before the operation. Patient presented extensive collapse of lung and sluggish circulation to cyanosis. Heart's action not of the best, and strength rapidly failing. A bad case for operation. Operation made about 4 P. M. Incision through the two upper tracheal rings and tube inserted. Child came out of the chloroform and operation in fine style. Lungs filling out, easy breathing and a quiet sleep following. Patient died suddenly about 3 A. M. next morning. This case illustrates one of the beneficial results of tracheotomy—an easy, painless death.

Case 3.—February 12, 1883. Membranous croup developed insidiously in a child aged about eight years. After resorting to all the usual methods for relief tracheotomy was performed. The child was in a bad condition for operating. Collapse of lung, profuse sweating, cyanosis, variable pulse, and general strength rapidly failing. Chloroform was administered and an incision made through upper tracheal rings and the tube inserted. There was considerable venous hemorrhage, but not enough vitality was left in the child to expel the tough mucus from the throat through the tube. Artificial repiration and hypodermic injections of heart stimulants

were resorted to, but all were of no avail, the child died upon the operating table. This case also illustrates one of the little and embarassing side-issues which the operation is liable at any time to bring to the operator. Its moral effect upon the family and neighbors is not of the best either. Cases 2 and 3 were operations done in consultation and at the urgent request of the family after hearing and understanding an unfavorable prognosis.

Case 4.—Diphtheritic laryngitis in a young lady of 22 years. Had been suffering several days with increasing severity of symptoms and depression. Till upon the day of operation she had experienced several "choking or strangling spells." In the last one, shortly before the operation, death was imminent. The heart's action became weak, rapid and intermittent, with dilated pupils, cold sweat and cold extremities with general cyanosis. The family confident that she could not live through another such attack were willing and anxious for the operation. The collapse of lung was so well marked and complete that the stethoscope revealed air only in the larger bronchial tubes. With many misgivings as to the result, the operation was entered upon. Patient was chloroformed and before its complete action was obtained went into another of the spasmodic attacks. Hypodermic injections of cardiac stimulants were resorted to as well as artificial respiration. Soon the partial respiratory act was restored. Anæsthesia was now completed, and slow and careful dissecting, principally with handle of scalpel, was made till the upper three tracheal rings were exposed. Not a dozen drops of blood lost. Incision was made and tube inserted. The effect was marvelous. After several strong expulsive efforts attended with flying mucous and membrane, the banished air entered the collapsed and idle cells, and the music of the vesicular murmur was again heard. The respiratory act was now deep and normal. The patient came out from the chloroform

nicely, pulse regular and strong. The rosy hue of a perfect circulation established. Warmth and a general feeling of comfort and well-being was experienced. The recovery was rapid and not attended by a single accident or bad symptom. Tube removed at the end of 96 hours. The patient remained weak and anæmic for a long time after the operation; showing the extreme depression of the entire system from blood changes resulting from the period of imperfect aeration of the blood and to the action of the diphtheritic poison. These cases illustrate what is becoming more and more patent, viz., that tracheotomy to be a successful operation and save life, and add distinction to the operator, must be performed early; not waiting till the balance, which holds the flickering life in suspension dips irrevocably in favor of death; not waiting till nature has proven inadequate and then endeavoring to help her, find yourself simply hastening disaster. But we must take on a spark of divinity to ourselves, weigh the life in our balance while yet death is not certain, and judge and render decision. It is delicate, but must be done if life is to be saved by human intervention.

HARE-LIP.

Case 1.—Male child, age six years; resident of Polk county, Wis. Presenting an aggravated double hare-lip, with fissured alveolar arcade; broad, widely separated fissures, and the vomer carrying the intermaxillary bones forward so that the intermediate integumentary covering was on the same line and continuous with the ridge of the nose. The transposed intermaxillary septum contained rudimentary incisor teeth. In its entirety giving to the face of the patient a repulsive and peculiar deformation, with consequent impaired speech and ingestion. Child placed under an anæsthetic, the rudimentary teeth were drawn and then the central intercepted piece was cut to

a V shape. The lip fissures were now pared and prepared in the usual manner and with reference to the inception of the transposed central piece. Owing to the wide separation it was impossible to bring the parts neatly together. To obviate this I made on either side and above an eliptical incision through the skin and fasciæ of the cheeks. This proceedure allowed the fissured lip to fall sufficiently to procure a good approximation with the central piece. The parts were then secured with hare-lip pins. The wound united strongly and an excellent result and much improved facial aspect was obtained.

Case 2.—Child, aged one and a half years. Presenting a single uncomplicated fissure with wide separation. A previous unsuccessful operation had been performed by another gentleman. Child was placed under an anæsthetic. The lip was separated from the alveola and both free margins pared. Firm apposition secured with hare-lip pins. Result good.

SPINE—FRACTURE AND DISLOCATION.

Case 1.—During December, 1882, Wm. P., while at work in the construction of a building, fell from a scaffolding, some 20 feet from the ground, and alighted crosswise upon a heavy timber below, resulting in a fracture and dislocation of the spinal column at the junction of the dorsal with the lumbar vertebræ. The symptoms of pain, deformity, paralysis of bowels, bladder and lower extremities were present. The patient was injured at an out of the way station on the North Wisconsin Railway. He was placed aboard a train and sent to Stillwater. Reaching here the second day after the injury, I had him removed to the city hospital. Placed him under the influence of chloroform, and directed two powerful men to exert strong and even force from opposing points, the one grasping him under the arms and the other the pelvic

bones. A distinct thud was heard and felt as the dislocated vertebræ came together, and the deformity of the spine was reduced. The effect upon the patient was marked. A general relaxation of the muscles and a partial relief of paralysis as well as entire freedom from pain was obtained for the time being. An extension weight and pulley was rigged and adjusted so as to keep up constant and steady traction in the line of the spinal column. But inflammation spread from the lacerated and contused point, and the patient died in 10 days with spinal and cerebral meningitis. No post-mortem was allowed.

HERNIOTOMIES.

Case 1.—Mr. P., aged 74. Patient had been a sufferer from an old hernia of immense size for many years. While pitching hay he caused to escape a large amount of omentum and intestine, which became immediately irreducible. His attending physician being unable to reduce it by taxis, called me in about three hours after strangulation had occurred. The scrotum and its contents were of immense size and very tender, and symptoms of strangulation well marked. With further consultation it was decided a case for immediate operation, in case of failure to reduce under an anæsthetic. After being placed fully under the influence of ether, taxis was tried, but with a negative result. I instantly proceeded to operate. Upon opening the sac, I found an old oblique hernia nearly converted into a direct. The strangulating band was evidently the external ring and required extensive divisions to allow the parts to return. The operation was completed without any untoward accident. The patient made a very rapid recovery and was about in ten days. I used thorough antiseptic precautions in operation and dressing. The wound healed by first intention.

Case 2.—R. McG., aged 40. While laughing heartily

over an incident at cards his abdominal walls became so relaxed as to allow the escape of a large knuckle of intestine. Violent symptons of strangulation became immediately apparent. I was called four hours after the escape of the intestine. I took him to the city hospital at once and decided to operate if the hernia was found irreducible after a full anæsthetic. Taxis failing, under ether, I cut down and opened the sac. The contents were entirely intestine. The stricture was at the inner ring, and after its division, in attempting the reduction I carelessly raised my hand from the incision in the sac and its contents escaped. This necessitated considerable manipulation of the intestine to reduce it, and consequently increased the danger of inflammation, but happily the patient made a very rapid recovery. The wound healed entirely by first intention, and the patient, contrary to orders, walked a mile the ninth day after the operation.

Case 3.—J. S., aged about fifty, sent for me Nov. 29, to reduce a hernia. He had been intoxicated the evening previous, and the intestine escaped under the pad of his truss and remained strangulated fifteen hours before my arrival. Upon examination I found great tenderness of tumor and constant vomiting and retching. The pain was very great and evidently much swelling. I ordered his removal to the city hospital and called in the consulting surgeons. It was decided to put him immediately under ether, and in case of failure at reduction by manipulation, to at once operate. After being fully etherized it was found impossible to reduce the hernia, and I proceeded to operate. Cutting down and opening the sac I found a direct hernia lying under Poupart's ligament. I divided the stricture and reduced the intestine without difficulty, but a large mass of omentum was found firmly adhered to the sac by old adhesions, and which it was found impossible to separate. I consequently ligated the

bones. A distinct thud was heard and felt as the dislocated vertebræ came together, and the deformity of the spine was reduced. The effect upon the patient was marked. A general relaxation of the muscles and a partial relief of paralysis as well as entire freedom from pain was obtained for the time being. An extension weight and pulley was rigged and adjusted so as to keep up constant and steady traction in the line of the spinal column. But inflammation spread from the lacerated and contused point, and the patient died in 10 days with spinal and cerebral meningitis. No post-mortem was allowed.

HERNIOTOMIES.

Case 1.—Mr. P., aged 74. Patient had been a sufferer from an old hernia of immense size for many years. While pitching hay he caused to escape a large amount of omentum and intestine, which became immediately irreducible. His attending physician being unable to reduce it by taxis, called me in about three hours after strangulation had occurred. The scrotum and its contents were of immense size and very tender, and symptoms of strangulation well marked. With further consultation it was decided a case for immediate operation, in case of failure to reduce under an anæsthetic. After being placed fully under the influence of ether, taxis was tried, but with a negative result. I instantly proceeded to operate. Upon opening the sac, I found an old oblique hernia nearly converted into a direct. The strangulating band was evidently the external ring and required extensive divisions to allow the parts to return. The operation was completed without any untoward accident. The patient made a very rapid recovery and was about in ten days. I used thorough antiseptic precautions in operation and dressing. The wound healed by first intention.

Case 2.—R. McG., aged 40. While laughing heartily

over an incident at cards his abdominal walls became so relaxed as to allow the escape of a large knuckle of intestine. Violent symptons of strangulation became immediately apparent. I was called four hours after the escape of the intestine. I took him to the city hospital at once and decided to operate if the hernia was found irreducible after a full anæsthetic. Taxis failing, under ether, I cut down and opened the sac. The contents were entirely intestine. The stricture was at the inner ring, and after its division, in attempting the reduction I carelessly raised my hand from the incision in the sac and its contents escaped. This necessitated considerable manipulation of the intestine to reduce it, and consequently increased the danger of inflammation, but happily the patient made a very rapid recovery. The wound healed entirely by first intention, and the patient, contrary to orders, walked a mile the ninth day after the operation.

Case 3.—J. S., aged about fifty, sent for me Nov. 29, to reduce a hernia. He had been intoxicated the evening previous, and the intestine escaped under the pad of his truss and remained strangulated fifteen hours before my arrival. Upon examination I found great tenderness of tumor and constant vomiting and retching. The pain was very great and evidently much swelling. I ordered his removal to the city hospital and called in the consulting surgeons. It was decided to put him immediately under ether, and in case of failure at reduction by manipulation, to at once operate. After being fully etherized it was found impossible to reduce the hernia, and I proceeded to operate. Cutting down and opening the sac I found a direct hernia lying under Poupart's ligament. I divided the stricture and reduced the intestine without difficulty, but a large mass of omentum was found firmly adhered to the sac by old adhesions, and which it was found impossible to separate. I consequently ligated the

bones. A distinct thud was heard and felt as the dislocated vertebræ came together, and the deformity of the spine was reduced. The effect upon the patient was marked. A general relaxation of the muscles and a partial relief of paralysis as well as entire freedom from pain was obtained for the time being. An extension weight and pulley was rigged and adjusted so as to keep up constant and steady traction in the line of the spinal column. But inflammation spread from the lacerated and contused point, and the patient died in 10 days with spinal and cerebral meningitis. No post-mortem was allowed.

HERNIOTOMIES.

Case 1.—Mr. P., aged 74. Patient had been a sufferer from an old hernia of immense size for many years. While pitching hay he caused to escape a large amount of omentum and intestine, which became immediately irreducible. His attending physician being unable to reduce it by taxis, called me in about three hours after strangulation had occurred. The scrotum and its contents were of immense size and very tender, and symptoms of strangulation well marked. With further consultation it was decided a case for immediate operation, in case of failure to reduce under an anæsthetic. After being placed fully under the influence of ether, taxis was tried, but with a negative result. I instantly proceeded to operate. Upon opening the sac, I found an old oblique hernia nearly converted into a direct. The strangulating band was evidently the external ring and required extensive divisions to allow the parts to return. The operation was completed without any untoward accident. The patient made a very rapid recovery and was about in ten days. I used thorough antiseptic precautions in operation and dressing. The wound healed by first intention.

Case 2.—R. McG., aged 40. While laughing heartily

over an incident at cards his abdominal walls became so relaxed as to allow the escape of a large knuckle of intestine. Violent symptons of strangulation became immediately apparent. I was called four hours after the escape of the intestine. I took him to the city hospital at once and decided to operate if the hernia was found irreducible after a full anæsthetic. Taxis failing, under ether, I cut down and opened the sac. The contents were entirely intestine. The stricture was at the inner ring, and after its division, in attempting the reduction I carelessly raised my hand from the incision in the sac and its contents escaped. This necessitated considerable manipulation of the intestine to reduce it, and consequently increased the danger of inflammation, but happily the patient made a very rapid recovery. The wound healed entirely by first intention, and the patient, contrary to orders, walked a mile the ninth day after the operation.

Case 3.—J. S., aged about fifty, sent for me Nov. 29, to reduce a hernia. He had been intoxicated the evening previous, and the intestine escaped under the pad of his truss and remained strangulated fifteen hours before my arrival. Upon examination I found great tenderness of tumor and constant vomiting and retching. The pain was very great and evidently much swelling. I ordered his removal to the city hospital and called in the consulting surgeons. It was decided to put him immediately under ether, and in case of failure at reduction by manipulation, to at once operate. After being fully etherized it was found impossible to reduce the hernia, and I proceeded to operate. Cutting down and opening the sac I found a direct hernia lying under Poupart's ligament. I divided the stricture and reduced the intestine without difficulty, but a large mass of omentum was found firmly adhered to the sac by old adhesions, and which it was found impossible to separate. I consequently ligated the

bones. A distinct thud was heard and felt as the dislocated vertebræ came together, and the deformity of the spine was reduced. The effect upon the patient was marked. A general relaxation of the muscles and a partial relief of paralysis as well as entire freedom from pain was obtained for the time being. An extension weight and pulley was rigged and adjusted so as to keep up constant and steady traction in the line of the spinal column. But inflammation spread from the lacerated and contused point, and the patient died in 10 days with spinal and cerebral meningitis. No post-mortem was allowed.

HERNIOTOMIES.

Case 1.—Mr. P., aged 74. Patient had been a sufferer from an old hernia of immense size for many years. While pitching hay he caused to escape a large amount of omentum and intestine, which became immediately irreducible. His attending physician being unable to reduce it by taxis, called me in about three hours after strangulation had occurred. The scrotum and its contents were of immense size and very tender, and symptoms of strangulation well marked. With further consultation it was decided a case for immediate operation, in case of failure to reduce under an anæsthetic. After being placed fully under the influence of ether, taxis was tried, but with a negative result. I instantly proceeded to operate. Upon opening the sac, I found an old oblique hernia nearly converted into a direct. The strangulating band was evidently the external ring and required extensive divisions to allow the parts to return. The operation was completed without any untoward accident. The patient made a very rapid recovery and was about in ten days. I used thorough antiseptic precautions in operation and dressing. The wound healed by first intention.

Case 2.—R. McG., aged 40. While laughing heartily

over an incident at cards his abdominal walls became so relaxed as to allow the escape of a large knuckle of intestine. Violent symptons of strangulation became immediately apparent. I was called four hours after the escape of the intestine. I took him to the city hospital at once and decided to operate if the hernia was found irreducible after a full anæsthetic. Taxis failing, under ether, I cut down and opened the sac. The contents were entirely intestine. The stricture was at the inner ring, and after its division, in attempting the reduction I carelessly raised my hand from the incision in the sac and its contents escaped. This necessitated considerable manipulation of the intestine to reduce it, and consequently increased the danger of inflammation, but happily the patient made a very rapid recovery. The wound healed entirely by first intention, and the patient, contrary to orders, walked a mile the ninth day after the operation.

Case 3.—J. S., aged about fifty, sent for me Nov. 29, to reduce a hernia. He had been intoxicated the evening previous, and the intestine escaped under the pad of his truss and remained strangulated fifteen hours before my arrival. Upon examination I found great tenderness of tumor and constant vomiting and retching. The pain was very great and evidently much swelling. I ordered his removal to the city hospital and called in the consulting surgeons. It was decided to put him immediately under ether, and in case of failure at reduction by manipulation, to at once operate. After being fully etherized it was found impossible to reduce the hernia, and I proceeded to operate. Cutting down and opening the sac I found a direct hernia lying under Poupart's ligament. I divided the stricture and reduced the intestine without difficulty, but a large mass of omentum was found firmly adhered to the sac by old adhesions, and which it was found impossible to separate. I consequently ligated the

bones. A distinct thud was heard and felt as the dislocated vertebræ came together, and the deformity of the spine was reduced. The effect upon the patient was marked. A general relaxation of the muscles and a partial relief of paralysis as well as entire freedom from pain was obtained for the time being. An extension weight and pulley was rigged and adjusted so as to keep up constant and steady traction in the line of the spinal column. But inflammation spread from the lacerated and contused point, and the patient died in 10 days with spinal and cerebral meningitis. No post-mortem was allowed.

HERNIOTOMIES.

Case 1.—Mr. P., aged 74. Patient had been a sufferer from an old hernia of immense size for many years. While pitching hay he caused to escape a large amount of omentum and intestine, which became immediately irreducible. His attending physician being unable to reduce it by taxis, called me in about three hours after strangulation had occurred. The scrotum and its contents were of immense size and very tender, and symptoms of strangulation well marked. With further consultation it was decided a case for immediate operation, in case of failure to reduce under an anæsthetic. After being placed fully under the influence of ether, taxis was tried, but with a negative result. I instantly proceeded to operate. Upon opening the sac, I found an old oblique hernia nearly converted into a direct. The strangulating band was evidently the external ring and required extensive divisions to allow the parts to return. The operation was completed without any untoward accident. The patient made a very rapid recovery and was about in ten days. I used thorough antiseptic precautions in operation and dressing. The wound healed by first intention.

Case 2.—R. McG., aged 40. While laughing heartily

over an incident at cards his abdominal walls became so relaxed as to allow the escape of a large knuckle of intestine. Violent symptons of strangulation became immediately apparent. I was called four hours after the escape of the intestine. I took him to the city hospital at once and decided to operate if the hernia was found irreducible after a full anæsthetic. Taxis failing, under ether, I cut down and opened the sac. The contents were entirely intestine. The stricture was at the inner ring, and after its division, in attempting the reduction I carelessly raised my hand from the incision in the sac and its contents escaped. This necessitated considerable manipulation of the intestine to reduce it, and consequently increased the danger of inflammation, but happily the patient made a very rapid recovery. The wound healed entirely by first intention, and the patient, contrary to orders, walked a mile the ninth day after the operation.

Case 3.—J. S., aged about fifty, sent for me Nov. 29, to reduce a hernia. He had been intoxicated the evening previous, and the intestine escaped under the pad of his truss and remained strangulated fifteen hours before my arrival. Upon examination I found great tenderness of tumor and constant vomiting and retching. The pain was very great and evidently much swelling. I ordered his removal to the city hospital and called in the consulting surgeons. It was decided to put him immediately under ether, and in case of failure at reduction by manipulation, to at once operate. After being fully etherized it was found impossible to reduce the hernia, and I proceeded to operate. Cutting down and opening the sac I found a direct hernia lying under Poupart's ligament. I divided the stricture and reduced the intestine without difficulty, but a large mass of omentum was found firmly adhered to the sac by old adhesions, and which it was found impossible to separate. I consequently ligated the

bones. A distinct thud was heard and felt as the dislocated vertebræ came together, and the deformity of the spine was reduced. The effect upon the patient was marked. A general relaxation of the muscles and a partial relief of paralysis as well as entire freedom from pain was obtained for the time being. An extension weight and pulley was rigged and adjusted so as to keep up constant and steady traction in the line of the spinal column. But inflammation spread from the lacerated and contused point, and the patient died in 10 days with spinal and cerebral meningitis. No post-mortem was allowed.

HERNIOTOMIES.

Case 1.—Mr. P., aged 74. Patient had been a sufferer from an old hernia of immense size for many years. While pitching hay he caused to escape a large amount of omentum and intestine, which became immediately irreducible. His attending physician being unable to reduce it by taxis, called me in about three hours after strangulation had occurred. The scrotum and its contents were of immense size and very tender, and symptoms of strangulation well marked. With further consultation it was decided a case for immediate operation, in case of failure to reduce under an anæsthetic. After being placed fully under the influence of ether, taxis was tried, but with a negative result. I instantly proceeded to operate. Upon opening the sac, I found an old oblique hernia nearly converted into a direct. The strangulating band was evidently the external ring and required extensive divisions to allow the parts to return. The operation was completed without any untoward accident. The patient made a very rapid recovery and was about in ten days. I used thorough antiseptic precautions in operation and dressing. The wound healed by first intention.

Case 2.—R. McG., aged 40. While laughing heartily

over an incident at cards his abdominal walls became so relaxed as to allow the escape of a large knuckle of intestine. Violent symptons of strangulation became immediately apparent. I was called four hours after the escape of the intestine. I took him to the city hospital at once and decided to operate if the hernia was found irreducible after a full anæsthetic. Taxis failing, under ether, I cut down and opened the sac. The contents were entirely intestine. The stricture was at the inner ring, and after its division, in attempting the reduction I carelessly raised my hand from the incision in the sac and its contents escaped. This necessitated considerable manipulation of the intestine to reduce it, and consequently increased the danger of inflammation, but happily the patient made a very rapid recovery. The wound healed entirely by first intention, and the patient, contrary to orders, walked a mile the ninth day after the operation.

Case 3.—J. S., aged about fifty, sent for me Nov. 29, to reduce a hernia. He had been intoxicated the evening previous, and the intestine escaped under the pad of his truss and remained strangulated fifteen hours before my arrival. Upon examination I found great tenderness of tumor and constant vomiting and retching. The pain was very great and evidently much swelling. I ordered his removal to the city hospital and called in the consulting surgeons. It was decided to put him immediately under ether, and in case of failure at reduction by manipulation, to at once operate. After being fully etherized it was found impossible to reduce the hernia, and I proceeded to operate. Cutting down and opening the sac I found a direct hernia lying under Poupart's ligament. I divided the stricture and reduced the intestine without difficulty, but a large mass of omentum was found firmly adhered to the sac by old adhesions, and which it was found impossible to separate. I consequently ligated the

bones. A distinct thud was heard and felt as the dislocated vertebræ came together, and the deformity of the spine was reduced. The effect upon the patient was marked. A general relaxation of the muscles and a partial relief of paralysis as well as entire freedom from pain was obtained for the time being. An extension weight and pulley was rigged and adjusted so as to keep up constant and steady traction in the line of the spinal column. But inflammation spread from the lacerated and contused point, and the patient died in 10 days with spinal and cerebral meningitis. No post-mortem was allowed.

HERNIOTOMIES.

Case 1.—Mr. P., aged 74. Patient had been a sufferer from an old hernia of immense size for many years. While pitching hay he caused to escape a large amount of omentum and intestine, which became immediately irreducible. His attending physician being unable to reduce it by taxis, called me in about three hours after strangulation had occurred. The scrotum and its contents were of immense size and very tender, and symptoms of strangulation well marked. With further consultation it was decided a case for immediate operation, in case of failure to reduce under an anæsthetic. After being placed fully under the influence of ether, taxis was tried, but with a negative result. I instantly proceeded to operate. Upon opening the sac, I found an old oblique hernia nearly converted into a direct. The strangulating band was evidently the external ring and required extensive divisions to allow the parts to return. The operation was completed without any untoward accident. The patient made a very rapid recovery and was about in ten days. I used thorough antiseptic precautions in operation and dressing. The wound healed by first intention.

Case 2.—R. McG., aged 40. While laughing heartily

over an incident at cards his abdominal walls became so relaxed as to allow the escape of a large knuckle of intestine. Violent symptons of strangulation became immediately apparent. I was called four hours after the escape of the intestine. I took him to the city hospital at once and decided to operate if the hernia was found irreducible after a full anæsthetic. Taxis failing, under ether, I cut down and opened the sac. The contents were entirely intestine. The stricture was at the inner ring, and after its division, in attempting the reduction I carelessly raised my hand from the incision in the sac and its contents escaped. This necessitated considerable manipulation of the intestine to reduce it, and consequently increased the danger of inflammation, but happily the patient made a very rapid recovery. The wound healed entirely by first intention, and the patient, contrary to orders, walked a mile the ninth day after the operation.

Case 3.—J. S., aged about fifty, sent for me Nov. 29, to reduce a hernia. He had been intoxicated the evening previous, and the intestine escaped under the pad of his truss and remained strangulated fifteen hours before my arrival. Upon examination I found great tenderness of tumor and constant vomiting and retching. The pain was very great and evidently much swelling. I ordered his removal to the city hospital and called in the consulting surgeons. It was decided to put him immediately under ether, and in case of failure at reduction by manipulation, to at once operate. After being fully etherized it was found impossible to reduce the hernia, and I proceeded to operate. Cutting down and opening the sac I found a direct hernia lying under Poupart's ligament. I divided the stricture and reduced the intestine without difficulty, but a large mass of omentum was found firmly adhered to the sac by old adhesions, and which it was found impossible to separate. I consequently ligated the

mass with carbolized silk. The operation and after treatment was antiseptic, and the patient made a very rapid recovery.

Case 4.—Mr. R., aged 70, a sufferer with a double hernia for many years. While at work he slipped and caused to escape a mass of intestine that became immediately strangulated. I was sent for four hours thereafter and found the tumor firmly strangulated, and the vomitting and pain very frequent and severe. After consultation it was deemed best to give an anæsthetic and reduce by manipulation if possible, and failing therein, to operate. Patient fully under ether, manipulation gave a negative result. I at once entered upon the operation. Cutting down and opening the sac I found the contents of the hernia to be a knuckle of intestine strangulated at the inner ring. I divided the stricture and reduced the hernia without difficulty. Antiseptic precautions were used in the operation as well as the after treatment. Patient made a good recovery without any traces of peritonitis.

I report these cases in advocacy of a very early operation in strangulated hernia. I am convinced by experience and observation that the frightful mortality after this operation is principally due to procrastination. Modern antiseptic surgery has proven that the opening of the abdominal cavity is attended with but little danger. This much is admitted by friends and enemies of Listerism alike. This being the case, the great amount of peritonitis is due to mechanical causes, and the sooner the cause is removed the lower will be the mortality following the operation. I believe with the experiences of modern abdominal surgery, that when we are called to treat a strangulated hernia we should immediately put our patient profoundly under the influence of an anæsthetic, and in case of failure at reduction by thorough taxis proceed and operate. There may be a few cases that would yield

to opium narcosis and not to an anæsthetic; but the number certainly cannot compensate for the danger in delaying until we have tried the effects of a full opiate. I am convinced that with this plan of treatment the mortality of this operation might be greatly reduced. In the cases reported above where strict antiseptic precautions were observed, not a bad symptom followed the operation. Two of these patients were upward of seventy years of age and in one other extensive adhesions of omentum existed. That statistics will soon be published from our metropolitan hospitals showing a very low mortality from this operation I sincerely believe. The statistics of the general surgeon are unfair to base the mortality of this operation upon, as many of the cases falling to his care are not within the reach of early surgical treatment. I believe the mortality of this operation should be kept far below that of modern ovariotomies.

MAXILLARY BONES—FRACTURE AND DISLOCATION.

Case 1.—R. S., aged 35. While "on the drive" got caught in a "log jam." Resulting in a fracture of the alveolary arch and superior maxillary bone as well as a dislocation of the inferior maxillary. I saw him 24 hours after the injury. I first reduced the dislocated inferior maxillary. I then inspected the superior and found it so badly fractured, misplaced and loose, as to render it impossible to confine it in the desired position by any ordinary methods. I therefore had a dentist mould a soft rubber plate in the proper shape and with a hook projection that overlapped the teeth of the inferior maxillary. Applied this contrivance and bandaged the jaws firmly together for ten days, giving the patient nourishment between his teeth and through a tube. The result was good union witnout any lateral displacement.

Ovarian Tumor.

Case 1.—Mrs. B., aged 28, wife of an iron worker, and mother of three children, came under my observation June, 1882. History in brief was, that soon after birth of last child, some two years previous, she began to enlarge. Patient was living in Philadelphia at the time and consulted with several physicians, a diagnosis of ovarian tumor being made. Nine months previous to operation she lay sick with what a homeopathic practitioner designated typhoid fever. The latter, as the sequel would indicate, was probably a sub-acute peritonitis. Six months previous to operation patient was tapped and a gallon of fluid drawn. Soon after a consultation was held as to the feasibility of an operation, resulting in a verdict unfavorable, owing to low vitality and strength. She was advised to go West and recuperate during the summer months. Mrs. B. came to Stillwater during June, 1882, and came under my care. I sent her to the City Hospital and placed her upon bark and iron with nutritous food. She gained strength quickly and rapidly till the fast growing tumor so encroached upon the abdominal cavity, interfering mechanically with visceral functions, as to require something to be done at once. After consultation with Drs. Hoyt and Johnson of Hudson, Stone and Wheaton of St. Paul, and Townsend of New York City, the tumor was, without a dissenting voice, considered an ovarian mono-cyst, comparatively free and unattached, and a moderately favorable case for operation.

The operation was entered upon the afternoon of July 30, '82, with the usual number of assistants, needful instruments, and antiseptic precautions.

1st. Incision through abdominal walls. The latter were thin and free from fat. Incision ran from a point midway between umbilicus and crest of pubes, over the linea alba for a distance of 2½ inches. With careful dissection the

peritoneum was reached. It did not present its usual shining blue appearance, but was dull and characterless, indistinguishable from and firmly adherent to the sac.

2d. Tapping of tumor. With a Wells trochar the sac was now penetrated and relieved of its fluid contents, amounting to about 30 lbs. weight. The sac was now found to be a mono-cyst; its contents a greenish yellow fluid.

3rd. Removal of the sac. In attempting to separate the sac from the peritoneum, it was found so firmly adherent as to make it a matter of delicate manipulation, requiring much time and care. The sac presented a dull leaden hue, rendering its distinction from the peritoneum difficult. The complete removal of the sac was soon demonstrated to be an impossibility. It was universally adherent. Adhesions to bladder, uterus, spleen, everything with which it came in contact. The operation manifestly must become one of partial excision. With this end in view separations were made to such extent as was warranted by the time consumed and the depressed condition of the patient now under ether over an hour. In all nearly one-half of the sac was excised.

4th. Cleansing the peritoneum. With care the wound was now wiped up with soft carbolized sponges and all bleeding vessels and venous oozing checked.

5th. Drainage. A large and suitable rabber drainage tube was inserted with reference as much as possible to the force of gravity.

6th. Closing abdominal wound. With deep silver wire sutures, involving abdominal wall, peritoneum and sac, the wound was brought firmly together and additional support made with heavy adhesive plasters.

7th. Antiseptic dressing. Mackintosh and protective gauze thickly and evenly applied, and over all a snug flannel bandage.

Patient was now removed to a bed and attention given to a successful reaction from shock and ether. Great de-

pression was present, and cardiac stimulants and artificial heat were resorted to. After some time of anxiety and uncertainty reaction was obtained. A marked stomach irritation was present, rendering successful ingestion impossible, and rectal injections of brandy, milk, beef tea, etc., were necessitated for the first forty-eight hours. Vomiting continued once and twice a day for some time. While a partial use of stomach was obtained on the second day, the rectum was used as an auxiliary for several days. The customary opiate was given as necessary to relieve pain, and the intestines kept inactive for seven days. The sac cavity was washed out two and three times a day with a saturated solution of boracic acid. About five days after the operation portions of sloughed sac came away. This disintegration of sac continued over a period of three weeks, the pieces varying in size from a mere shred to a mass three and four inches square.

Following are a few selections from the pulse and temperature record:

Date.		*Pulse.*	*Temp.*
July 30th.	8:45 p. m.	125	102
"	11:00 "	120	100 3-5
July 31st.	6:45 a. m.	110	99 4-5
"	11:00 "	105	98 1-4
"	2:30 p. m.	104	98 3-4
"	5:00 "	120	99 3-4
"	9:30 "	120	100 3-4
August 1st.	3:10 a. m.	115	98 1-2
"	9:00 "	112	99 3-4
"	12:20 p. m.	104	98 1-2
"	5:30 "	112	99 3-5
"	8:30 "	118	100
August 2d.	12:30 a. m.	112	99
"	9:00 "	108	99 3-4
"	3:00 p. m.	116	99 1-2
"	5:30 "	120	99

But little variation in above record was noted during convalescense, the pulse not exceeding 120 and the temperature not rising above 102°, the point reached about three hours after the operation. The recovery was somewhat slow, with periods of depression. Six weeks from the operation the patient left the hospital in fair general condition—good strength, good flesh, and the discharge from the sac small in amount and healthy. The patient was removed to the home of her parents, a Swede family, verging on pauperdom and living in a hovel by the side of a small lake, some thirty miles from medical aid.

Nothing was heard from her for some two months and a half. My partner visited her at this time. She was in a miserable condition — emaciated, weak, dirty, with loss of appetite, and with a copious ill-smelling discharge from the sac cavity. Her husband worked in Philadelphia, while she was here in a squalid, ill-ventilated apartment devoted to cooking, sleeping and general living and household purposes, occupied by some eight or ten human beings. She was ill-cared for, ill-treated, and in a mental state of melancholy; a striking contrast to her condition upon leaving the hospital. Medicine was left with little hope of benefit, and advice given to notify her husband and free herself from present surroundings as quickly as possible. Nothing more was heard of her till the latter part of the past March, when she came to Stillwater. Her husband obtained employment in the city, rented a house and placed his wife in happy domestic surroundings.

Tonic drugs and nutritious food were given.

At the present date there is another striking contrast—Mrs. B. doing her own house work, caring for her children, weighing 140 pounds, and blessed with mental content.

The sac cavity is now about the size of a small orange, with an average pus discharge of a drachm per day.

Daily injections of compound tincture of iodine are now used in hopes of an entire obliteration of the secreting surface of the sac and with good prospects of success.

This case neatly illustrates the potency a happy physical and mental environment has in the convalescing of a patient after a capital operation. Hand in hand with drugs, results almost miraculous are obtained. Drugs without this co-operation remain inert matter.

HERNIOTOMY.

Case 5.—Since reporting the preceding operations No. 5 has occurred, resulting in death, and bearing out, as the details will show, my theory of an early operation, showing conclusively the danger attending a delay. The case was one of femoral hernia, noticed by the patient for the first time a year previous. The gut escaped and strangulation was initiated Tuesday morning May 22d. The patient resided in the country five miles out of Marine, Minn. Dr. Gaskill of Marine was sent for and saw the patient Wednesday morning; found him in great pain and with frequent vomiting; was unable to reduce the hernia. Dr. Gaskill called again Thursday, finding the patient much the same bnt losing strength rapidly. Friday, May 25, Dr. Pratt of Stillwater was called in consultation. Dr. Pratt found the patient very weak from persistent vomiting and suffering from peritonitis. Dr. Pratt was prepared to operate, and urged an immediate operation, but the patient absolutely refused to allow an operation. Dr. Pratt returning home ran across the patient's brother, and again repaired to the suffering man's bedside, both urging him to consent to the cutting. They met with firm refusal. Late Saturday night a messenger came post haste for me to come and operate. I reached the house at early dawn Sunday, May 27, finding the patient in a very depressed and weak condition, and now

quite anxious for the cutting. Vomiting at an average interval of twenty minutes had been present since the first occurrence of the strangulation, and of a stercoraceous character during the last three days. Pulse weak and compressible, countenance anxious, but collapse not complete. With the attending physicians I performed the operation of herniotomy, at the same time feeling that death was imminent, and that a fatal result was probable. The proper incisions being made a large mass of omentum was found surrounding the gut. The omentum presented a condition of so low vitality as to render it unsafe to be returned to the abdominal cavity. I therefore ligated and cut it away. The gut lay in the omentum in such shape as to be in a measure protected from direct pressure, and was in a condition to be safely returned. The constricting point was at Gimbernat's ligament, and after its division the gut was easily returned. The constant vomiting was at once relieved, but the already present peritonitis continued, and within thirty-six hours after the operation caused the patient's death. This is my first fatal case in a list of six herniotomies. Although sorry to have my uniform success interrupted in this manner, there is yet a grim satisfaction in the lesson it teaches of an early operation. It neatly illustrates, when set in apposition with the preceding operations, and bears out the practice which I have advocated in my former writings. It gives a practical and scientific test-judgment for which a successful operation in this case would have been partially valueless.

At the present stage of abdominal surgery I deem it improper to make an artificial anus where the vitality of a section of a gut from any cause is lost, and in preference resort to a resection of the worthless portion, and return the gut to its natural place.

THREE CASES OF SURGERY.

CASE I.

Extensive Fracture of the Skull, Trephining. Death After Six Months Good Health.

At Dr. G. R. Moloney's request I offer the somewhat meagre sketch of the following case:

September 11th last, Peter B., German, aged 16, was thrown from a wagon by a runaway team, striking his head upon a boulder which lay by the roadside. Dr. G. R. Moloney, of Belle Plaine, was at once summoned and found the boy insensible with a scalp wound about four and one-half inches in length and an extensive fracture of the skull. He also picked up a small piece of a convolution of the cerebrum, which lay upon the rock. About midnight I arrived and after a superficial examination we decided to wait for daylight before operating. The boy was now conscious, and except occasional vomiting was quite comfortable and recovered from the shock.

Next morning we extended the scalp wound by a cross incision about four inches long; turned back the four large flaps, exposing nearly the whole of the upper and back part of the calvarium. It was now discovered that more than one-fourth of the left parietal (its posterior superior angle), about two square inches of the corresponding part of the right parietal, and the superior angle of the occipital bone to the extent of one and a half square inches were fractured into six or eight large, and several small pieces, and the whole area of about three inches square was considerably depressed. There were no symptoms of compression of the brain, the pulse beat 68, temperature normal, vomiting had stopped and boy was perfectly rational. It was necessary to use the tre-

phine and Hey's saw before elevating, after which three square inches of the cranial wall was removed and we succeeded in raising very perfectly the balance of the depressed area. The superior longitudinal sinuses and the lateral sinuses extensively uncovered, but luckily not wounded, though there was trouble in stopping venous hemorrhage from a small vessel evidently at its entrance to the longitudinal sinus. Failing to ligate, it was cauterized and finally ceased to bleed. The extensive wound was washed with a carbolized solution, great attention being paid to cleanliness, the crucial wound of some 5x4 inches was carefully stitched with carbolized silk, a carbolized compress and a scalp bandage was applied, and all kept wet with an ice-cold carbolized solution. For the next five months there was not an untoward symptom. There was no elevation of temperature except a half degree on the second day; no nausea or vomitting, pulse more irregular, ranging from 72 to 76, and after a few days, appetite was pretty good. For one week from operation, all symptoms being favorable, the dressings were not removed; at the end of that time, they were removed, the wound was healed except a very small opening sufficient to admit a common probe. The dressings were clean and inodorous, but a few drops of pus ran from the wound. The stitches were removed and it was with difficulty that Dr. Moloney, who gave the utmost attention to the boy, could keep him quiet or be allowed to continue his visits, the parents regarding further visits as utter extravagance. Three weeks from the accident the boy was about on the farm and in four he was following the plow. He was bright, intelligent, healthy, and during the early winter he became very fleshy. In fact he enjoyed the best of health until early in February when his mother suddenly died and he followed her corpse on a fearfully cold day to the grave bare-headed. The next day he had considerable headache, which increased

gradually for a week. Then a small tumor began to form at the point where the bone was removed. After another week of irregular headache, which was at times very severe, he went to bed on account of muscular feebleness and was seen by Dr. M., who found him perfectly rational, but dull and inclined to lie quietly, bowels inactive, pulse somewhat irregular, but suffering from intense remittent headaches—sometimes pain was slight than again unbearable. Three weeks after the attack I saw him, the pulse was slow and irregular, there was slight ptosis of the right eye, also slight strabismus almost imperceptible. His mind appeared to be clear but torpid, remittent headaches were still more severe, though sometimes for hours his pain was slight. He was very wakeful. There was a pulsating tumor of oval shape about an inch long in diameter and one-half an inch thick, which lay to the right of the mesial line where the posterior superior angle of the right temporal bone had been removed. Morphia, bromide potass. and ergot failed to do good, and he gradually but steadily got worse, and twenty-nine days after attending the funeral bare-headed, he died March 4. His father says he was rational until a few minutes before death. No post mortem could be had. The whole country was blockaded with snow and cold and we were not aware of his death until some days after the funeral. It may be useless to hazard an opinion as to the cause of death or the nature of the tumor. Dr. Moloney says the tumor felt like an aneurism. I conclude that the boy's exposure to the cold caused a local pachymeningitis resulting in vascular adventitious growths causing a hematoma of the dura mater. Inflammatory action may have extended to the pia mater and even the brain substance, and it probably must have done so to cause some of the symptoms and rather speedy death.

P. S.—I am indebted to Dr. Moloney for revising these notes.

CASE II.

Excision of the Internal Cuneiform and Two-Thirds of the Scaphoid Bones.

Mr. J. R., aged 22, on the 23d of December last while intoxicated started on a rabbit hunt, carrying his double barrelled shot gun over the left shoulder, with the muzzle in the left hand. When about six rods from home he fell, bringing the gun over his shoulder and striking the hammer on the frozen ground, discharging the pin fire cartridges which were heavily loaded with No. 4 duck shot. The muzzle was within a few inches of his right instep, into which the whole charge entered, plowing up the inner surface of the foot from the ball of the great toe to the heel.

Examination showed the internal cuneiform to be totally and the scaphoid badly shattered, and the soft parts extensively torn in shreds. Under ether the fragments of the internal cuneiform were entirely removed. That part of the scaphoid which articulates with external and middle cuneiform and the astragalus, comprising its external third, was found to be in pretty good condition. Hence with a Hey's saw it was divided perpendicularly from dorsal to plantar surfaces, leaving a small piece bearing the two internal articular facets. The attachment of the tibialis posticus was severed. All shreds of flesh were cleared away, then small sponges carbolized and dusted with iodiform were crowded into the irregular cavity, all dusted again with iodiform and wound with gauze bandages. The sponges thus prepared, as I have several times found, stop every particle of hemorrhage in such wounds.

On the 26th, the sponges were removed, the cavity was absolutely clean, not a clot the size of a pin head, and the granulations were rapidly penetrating the sponge, in so

much that they were nearly grown fast. Each day subsequently the wound was washed with carbolic acid solution 1 to 100, and dusted over with iodiform and covered with carbolized tow. For ten days cavity filled up rapidly with almost no suppuration, after which it gradually completed the healing with moderate suppuration.

April 15, Mr. R. walks to the office, wearing a heavy cowhide shoe. Has pretty good use of the foot, though it still swells some during the day when he walks much, and there is a place the size of a three cent piece not yet covered with skin.

May 8. R. is walking about nearly all the time; says foot is good and strong and hardly needs a cane. To me the injury was a novel one, and at first I was in doubt whether it was best to attempt to save the foot, but followed the principle that in case of doubt, not compromising life, it is well to err on the side of conservatism, with the understanding that in case of failure a secondary operation could be done with little loss to patient but his time.

CASE III.

Excision of Lower Extremity of the Humerus for Comminuted Fracture.

C. S., aged 20, while trying to board a freight train was knocked down, bringing the left arm with great violence upon a tie. An hour after the accident he applied at the office to know if it was broken. The forearm and elbow were swollen remarkably, on which account the exact nature of the injury was not made out, but no crepitus could be detected, and a diagnosis was refused until swelling should subside. Patient was put to bed, arm supported on a pillow, cloths wrung out of cool water applied. In the morning, fearing sloughing, warm appli-

cations were applied, and in a few days a large area of skin and connective tissue on the radial side and a smaller one on the ulnar side sloughed out, exposing the open elbow joint, out of which fell the lesser head of the humerus. More than a hundred blisters formed along the forearm, which, being opened, discharged a large amount of bloody serum.

The lower end of the humerus was found to be fractured into five large and several small pieces, notwithstanding there had not been a scratch on the skin. The five pieces were the main shaft of the bone, the internal condyle, the external condyle, the lesser head of the humerus and the trochlear surface that articulates with the ulna. March 28, two weeks after the accident, assisted by Drs. Manson and J. B. Dunn, I turned the fractured bones out through the large slough on the radial side and sawed off the lower extremity of the humerus just above the condyles, removing three inches of the bone. The radius and ulna were intact and not excised.

Cleanliness was scrupulously observed before and during the operation. The cavity was filled with a plug of gauze dusted with iodiform and gauze and roller applied outside, and then laid in a sort of tin spout, from which it could be lifted before dressing and which enabled the arm to be swung about as a whole, and in a slightly flexed position.

After four weeks the wounds were mostly healed, except that a pretty large ulcer was not yet covered with skin. Now an apparatus, consisting of a shoulder-cap, arm and forearm splint, with a ball and socket joint at shoulder and hinge joint at elbow with screw to adjust the angle of the elbow, was applied each day; by means of this screw we are giving the elbow a little passive motion.

May 8, the boy is doing well, visits office, and is able to give the passive motion to the arm himself by means of the screw. Of course it is yet too early to say just how

useful the arm will be, but it bids fair to be excellent, compared with the results of amputation. I report the case on account of (1) the peculiar fracture; (2), the good results of (so far as possible) antiseptic treatment of a very extensive wound made on a suppurating ulcer, there not being half a degree elevation of temperature after the operation, except on the next day when it temporarily reached 100½° F.; (3), excision through an opening on the radial side of the arm.

REPORT OF D. W. HAND, M. D.

ST. PAUL, May 22d, 1883.

C. A. WHEATON, M. D., Chairman, Etc.

Dear Doctor.—I am reminded by the recent death of young Neash from tumor of the brain, to inquire whether, in the light of the autopsy you made, you believe the operation of trephining, which we at one time contemplated, would have relieved the atrocious pain he so long suffered.

[The autopsy in this case revealed the existence of a large sarcomatous growth occupying the anterior two-thirds of the right cerebral hemisphere. The patient had been totally blind for four years prior to death, and for some months before his demise had suffered from the most agonizing headache. His head symptoms had followed a fall, and the conformation of the right vertex leads us to believe that a fracture with depression had been the result of the injury. Cerebral tumor was diagnosed by Dr. Williams, of this city, to be the cause of all his trouble. Trephining was thought of as the only measure which could promise any relief, and with a possibility of the pathological condition being cerebral abscess or depressed

fracture, it was believed that trephining could do no harm and might, if Dr. Williams were right, relieve the intra-cranial tension sufficiently to cause un abatement of the pain. The sufferer died before the operation was put into execution, and the post-mortem disclosed the above condition of things. The apparent depression was caused by a protrusion of the growth, the pressure of which had brought about complete absorption of the vitreous table, and a thinning of the outer table, so that it could be easily broken with the finger nail. Trephining would probably have ended in disaster.]

And in this connection to report an unusually successful case of trephining.

James Molamphy of Dakota County, Minn., aged 45 years, was brought to me by his brother March 8th, 1881, with a note from Dr. Finch of Hastings saying the man was hopelessly insane, and asking my opinion about the advisability of trephining him. I found the man quiet and tractable, but without apparent memory or ability to answer the simplest questions. His brother stated that about twenty years ago he had fallen on his head and received a bad injury; that since then he had been able to work on a farm and take care of himself until about 1876, when he became demented and had grown gradually worse ever since; had never had a fit so far as known, nor suffered much from headache. He now required the constant care of an attendant. I found a depressed cicatrix about one inch and a half long a little to the left of the crown of the head; skin not adherent, but a decided depression of the skull. In every other respect the man appeared in good bodily health, and not addicted to any bad habits.

On my stating to his brother that there was a slight chance for improvement by an operation, he at once urged me to undertake it. The man was admitted to St. Luke's hospital, and on March 13, 1881, the surgeon then

in charge, Dr. A. Wharton, assisted by Dr. Senkler and myself, made the usual operation of trephining under the old scar. On raising the disk of bone, the inner table was found perfectly smooth and healthy in appearance; the depression having been confined to the external table. From this we concluded little relief would be derived from the operation, but to our surprise, the man showed signs of intelligence as soon as the anæsthesia passed off, and the next morning sat up in bed and talked rationally with the steward. His memory gradually returned, and he made so good a recovery that on March 29, 1881, he was discharged from the hospital and returned to his home near Hastings.

In July 1882, he was seen doing a man's work on a farm, and at the present time is reported by his sister as being "quite well."

I have recently been repeating the operation for varicocele, known as excision of the scrotum; and now desire to express my opinion that it is the safest and best way of dealing with many cases of that troublesome complaint. Of course all cases of varicocele will not require operation. Many large varicoceles cause no inconvenience whatever, and often the patient goes through life without knowing there is anything abnormal about his condition; but frequently the anoyance is so great something has to be done. This operation is perfectly safe, and in my experience has given general satisfaction.

During the past two years I have excised a portion of the scrotum for varicocele nine times and in no case had any unpleasant result. Only four of these cases remained under my observation for any considerable time. They were greatly benefitted and all expressed satisfaction with the result.

In my earlier cases I used a pair of long dressing forcept as a clamp, but have since found Henry's clamp of great assistance. In my own cases I have not seen ery-

sipelas or gangrene, but in consultation I have seen two cases where after this operation nearly the whole scrotum sloughed off, leaving the testicles exposed. This accident looks much worse than it really is. In both the cases referred to recovery was rapid and I am told the patients were cured of varicocele.

In the removal of *moles*, small tumors, etc., on the face, I have been much pleased with the operation by electrolysis. A ten cell battery with an insulated needle will destroy one of these unsightly marks in about one minute, with very little pain and no disfiguring scar.

Yours Truly,

D. W. HAND.

REPORT OF W. H. PRATT, M.D.

JULY 12TH, 1882, AMPUTATION OF LEG AND KNEE, WITH REAMPUTATION MAY 2d, 1883.

Charles Kling, received at the City Hospital July 9th, 1882, suffering from the effects of having his left leg crushed three weeks before at Marine. The lower half of the leg was a mass of corruption; the patient's pulse was 120 and temperature 102, with the glands of the neck and groins beginning to enlarge and no appetite. It was a case that would admit of no delay, but I could not gain his consent to an amputation until July 12th, when, with the assistance of Dr. Millard and others, I commenced by amputating below the knee. But this was found impracticable, as the integuments were very much diseased. I then amputated at the knee joint. After the amputation, noticed that the flaps did not present a healthy appearance, but the patient was too much weakened to

allow me to make another amputation; and the stump was dressed antiseptically. The patient rallied nicely from the effects of the operation.

July 18th.—Both flaps presented a purple appearance, and the discharge was extremely offensive.

July 20th.—The flaps sloughed, having both the condyles completely exposed.

When the patient was received at hospital he was placed on a milk and beef tea diet and given quinine and tict. ferri freely At this date he was taking twenty-four grains of quinine and three drachms of tinct. ferri daily. His appetite commenced to improve, pulse below a hundred and temperature nearly normal. This condition continued about the same, with a steady improvement in the general condition of the patient until about Aug. 1st, when granulation commenced about the edge of the sore, and gradually began to cover the condyles. By advice of Dr. Wheaton, of St. Paul, and others, I applied straps the entire length of the thigh with weights attached, and endeavored in this manner to help cover the exposed condyles. This I persisted in for two weeks without any benefit.

Sept. 19th.—The condyles were both covered and the patient's health good.

Sept. 24th.—Patient discharged from the hospital of his own accord. The wound healed with the exception of a small place over the outer condyle. At this spot the granulations were not covered by integument, but I had reason to hope they soon would be. The patient then passed from my notice until Jan. 10th, 1883, when I found him at the County House, and his leg much worse than when he left the hospital. I then ordered him back to the hospital, applied first iodoform for a time, following this by cauterization, and finally by permanganate of potass.; but all this was of no avail. I told the patient I did not think the leg would ever heal, and advised an

operation. I was supported in this by the other physicians, and the patient finally consented to the operation.

May 2d.—The leg was again amputated. The operation was made first as near to the condyles as possible, but we were not a little surprised (and very much disappointed) to find the bone diseased at this point. I immediately made another amputation two inches higher, and while we found the bone much improved at this point it was still diseased. A hurried consultation was had, but the chances of the patient living through another amputation, and that at the hip joint, were so poor that we decided to make the best of it for the present. The stump was dressed as before, with an extra drainage tube inserted in the marrow of the bone, which was soft, and the patient made a good rally. The wound healed nicely, and at this date he is able to be around the room and is apparently in perfect health.

FRACTURE OF SKULL—NO. 1.

Sept. 4th.—Francis Clegg, aged sixteen, received at the City Hospital, having received a fracture by the kick of a horse upon right side of the head, about one inch above and back of ear; skull crushed the entire size of the calk of shoe and depressed one-fourth of an inch. The family were sent for but objected to an operation. Cold applications were employed and the wound healed without any unpleasant symptoms.

Oct. 30th.—Patient discharged from hospital entirely well, and has had no trouble with his head from the effects of the injury up to the present time.

FRACTURE OF SKULL—NO. 2.

Mr. A. was injured while working in the shops at the State's Prison by the falling of the iron base of one of the upper windows, the base striking him upon the left side of the head near the front and central part of parietal bone. The fracture was two and one-half inches in length and one-half inch in width at center, and was depressed one-third of an inch. When the patient was received at hospital his pulse was below forty, temperature below the normal; used cold applications. Pulse continued low for one week, and the patient had no appetite and tongue badly coated. After the first week he commenced to show signs of improvement, both in the wound and constitutionally, and from this time the patient continued to improve until he was discharged from the hospital convalescent, in a little over four weeks.

FIBRO-CYSTIC MESENTERIC TUMOR.

The data for this article were kindly furnished me by J. W. Andrews, M. D., of Marshall, and with the exception of one consultation visit something like two mouths prior to the operation and the operation itself, I know but little of the case.

I read from Dr. Andrews' notes as follows: "Patient, Christine Johnson, Icelandic parentage; family history unimportant. Nov, 1st, 1880, was consulted by the mother in reference to what she called a hard lump in the stomach of this little girl, who was at the time only nine years of age. Upon evamination I found a solid, spherical mass within the abdomen, freely movable. Although the abdomen walls were extremely thin it was impossible to detect the slightest trace of fluctuation. The tumor, at this time, was the size of an ordinary orange. Her gen-

eral health seemed to be very good. Made no vaginal examination, but from the extreme hardness of the tumor and the further fact that by lifting it upward the vulva was drawn upward also, I had no difficulty in diagnosing "Uterine Fibroid." This patient was kept under observation from that time until one year later, during which period there appeared no reason to change my previous opinion. The tumor did not materially increase in size until about April, 1881, when it began to enlarge rapidly and the general health to give way.

In August, 1881, Drs. C. E. Persons of Marshall, and Berry of New Ulm, were called in consultation, and after a most careful and thorough examination, they confirmed my diagnosis. On the 25th of October, the Minnesota Southwestern Medical Society met here. The little patient was brought before them, and after a most exhaustive investigation it was unanimously diagnosed Uterine Fibroid. In consideration of its rapid development, as well as of the general breaking down of health, it was agreed that surgical interference alone could be of any possible benefit.

The mother was duly informed of the serious nature of such an operation, the dangers fully explained, as well as the slight chances of success. Her consent was readily given, and the first day of November following was selected. The patient's health at this time was very poor, she being pale and anæmic; the bowels constipated; but little appetite and worse digestion. She walked with great difficulty and with a staggering gait, could see but imperfectly,—the vision being double in one eye, in the other blurred and indistinct. Strange to say she had never experienced any pain.

It being cloudy and dark during the day appointed for the operation, it was deemed advisable to postpone it to the succeeding day, at which time there were present the operator, Dr. Berry of New Ulm, and assisting

him, Drs. Jenks and Stauffer of Lake Benton, Farnsworth of Canby, Persons of Marshall, and myself. My office was selected as the place for operation, the rooms being large, light and airy. All matting, clothing, and superfluous furniture were removed, the floor was thoroughly scrubbed the day before, and the walls dampened by steam the morning of the operation. This was done with the view of having the atmosphere free from dust. The operation was performed under the carbolic acid spray, 2½ per cent. solution, supplied by means of two large steam atomizers. The room was heated to a temperature of 95° F., and maintained at this point during the entire operation, which lasted one hour and three-fourths. This was done with the view of lessening the nervous shock produced by the contact of cold air upon the bowels after the abdomen had been laid open. I enter thus largely into the details of preparatory measures, believing the favorable result obtained was largely due to the care with which these minutiæ were carried out. Even the coats and vests of all present were removed and each one was strictly enjoined from moving unnecessarily about the room. The shirt sleeves were rolled above the elbows and securely fastened; the hands and arms of all, as well as all instruments used, were thoroughly carbolized.

At 10 A. M., the patient being fully etherized, Dr. Berry made an incision in the linea alba, from the umbilicus well down to the pubis; the peritonæum was picked open in the usual manner, when a large, white, shining, spherical tumor was exposed to view. Percussion revealed no fluctuation. The uterus and ovaries were found in place without connection with or adhesions to the tumor. Dr. Berry then brought the aspirator into requisition, and, to the surprise of all, drew off 22 ounces of a pale serous fluid, when the walls, which were fully a half inch thick, collapsed.

The adhesions to the peritonæum were firm and exten-

sive; these were broken down by the fingers alone, requiring a great deal of time, patience, and perseverance. It had no pedicle proper, but at the point of firmest attachment there was a thickened, hardened portion a little larger than a silver half dollar. There were found two smaller mesenteric cysts, each about the size of a hazel nut, which were removed. The adhesions fully explain the lifting of the vulva upon the application of upward traction to the tumor. The bowels, which had been kept covered by a warm cloth, were now carefully replaced; the abdominal cavity thoroughly cleaned and dried by means of carbolized absorbent cotton, the walls of the abdomen coaptated and closed by means of nine deep and two superficial silver wire sutures. A gum elastic drainage tube was left in the lower angle of the wound and covered with absorbent cotton. Borated cotton was placed over the wound and held firmly in place by a wide bandage. One-eight grain of morphia was then hypodermically given and after three hours, having completely rallied from the anæsthetic, the patient was placed on a cot and removed to her own home, a distance of sixty rods.

Nov. 2d.—4 P. M., micturated freely. 8 P. M., pulse 120; temperature 102. Somewhat restless; had partaken of no nourishment since the day previous. Ordered a glass of milk every four hours during the night, and one-eighth grain morphia sulphate was given dry on the tongue—a second dose to be given if necessary.

Nov. 3d.—8 A.M.—Had rested well without the extra morphine powder. Pulse 100, regular but weak; temperature 100. Had taken the milk with avidity and still complained of hunger. Re-dressed the wound; removed, cleansed and replaced drainage tube. Ordered grain doses of quinia every four hours and one-half grain doses of opii pulv. sufficiently often to keep patient absolutely at rest, and continued the milk diet. 8 P.M.—Pulse 120;

temperature 101; respiration normal. Had passed a comfortable day. Wound re-dressed.

Nov. 4th.—8 A. M.—Pulse 100; temperature 99¾. Treatment continued, but substituted beef tea for milk at request of patient. 8 P.M.--Pulse 80, irregular and intermitting; temperature 100¾. Has taken during the day two cups of beef tea and the same amount of milk; appetite voracious , frequently asking for solid food. Treatment continued.

Nov. 5th.—8 A. M.—Pulse 68 and irregular; temperature 99¾. Had passed a comfortable night. Treatment continued, with the addition of ten drops tr. digitalis that morning. 8 P. M.—Pulse 68, irregular; temperature 99. Five drops tr. digitalis at 9 P. M. and five more at 2 A.M.

Nov. 6th.—10 A.M.—Pulse 68, a little stronger and not so irregular as the day before; temperature 99¼. The bowels had moved twice during the night; the stool was natural and unattended with pain. The abdomen was tympanitic and tender on pressure. The drainage tube was removed and four silk threads substituted. 7 P.M.—Pulse 72, more regular; respiration normal; temperature 99. Bowels had moved again during the forenoon, and were but little tympanitic. Treatment continued, only opium given more freely and six drops digitalis twice every twenty-four hours.

Nov. 7th.—9 A.M.—Pulse 68, regular; temperature 99. Patient doing very well. 8 P.M.—Patient doing well.

Nov. 8th.—8 A.M.—Pulse 68; temperature 99. 8 P.M.--Pulse 60; temperature 99½.

Nov. 9th.—9 A.M.—Pulse 69, regular; temperature 99. 8 P.M.—Pulse 84, irregular; temperature 99½. Ten drops of tr. digitalis at 9 P.M. She is now taking only four grains of quinia and two of powdered opium every twenty-four hours.

Nov. 10th.—8 A.M.—Pulse 64, regular; temperature 98½. Had rested well.

Nov. 11th.—9 A.M.—Pulse 72; temperature normal. During the night had complained of pain in the bowels. Withdrew the opium and give a half oz. olive oil, which produced two stools of hardened faeces, with decided relief to patient.

Nov. 12th.—Doing well.

Nov. 13th.—Doing well.

Nov. 14th.—Doing well. Removed all but two sutures and applied adhesive straps.

Nov. 15-16th.—Doing well.

Nov. 17th.—Removed balance of sutures. Union good except in lower angle of wound.

Nov. 18th.—Discontinued internal medication.

Nov. 19th.—Continued improvement. Engrafted pieces of skin from mother's arm upon the granulations in the lower angle of the wound.

Nov 21st.—Ordered soft-cooked eggs and a small piece of bread. This is the first solid food partaken of.

Nov. 23d.—Patient severely ill with scarlet fever, which is epidemic in the town. The temperature for three days ranging from 103½ to 104½° F.; pulse from 150 to 160 per minute. Quite delirious. Capillary circulation feeble.

Made a good recovery without any sequelæ, and in two weeks' time was convalescent. At this time, June 7th, 1883, there are no signs of any return of disease. The little girl is attending school; is a bright, interesting child, and has recovered her vision.

Query.—As the tumor originated in a mesenteric gland, what are the chances of another one becoming implicated in like manner? Again, what is the etiology?

TRACHEOTOMY.

A. J. MURDOCK, M. D.

On December 9th, 1882, I was called in consultation to a case of diphtheria in a girl three years old. A child had died three days previously of membranous croup, so pronounced by the physician in charge, and the messenger said this one was going the same way. I went prepared to operate. Found my patient suffering from dyspnœa caused by exudation in the larynx. Proceded to operate under ether, assisted by Drs. E. Y. Arnold and H. G. Murdock. After making the primary incision the patient ceased to breathe. I made a second incision exposing the trachea, and plunged the knife in, making an opening large enough to admit of the introduction of the small tube, after which the child was resuscitated. Ether was again administered and the opening enlarged so as to admit the canula. The wound was closed by one suture and adhesive strips. There was no time for careful dissection, and strange to say there was only capillary hemorrhage, and that was only sufficient to stain the sponges. I think the suspended respiration accounts for it. On the following day the mother was giving the child a bath when I called. Steam was used only for a very short time, except as it came from a kettle on the stove at some distance from the child. Pulmonary congestion set in, and the child died on the evening of the second day, Dec. 11th, fifty-six (56) hours after the operation. These two cases were the first that occurred here, and the mistake of diagnosis in the first was easy as the disease was manifested in the larynx only.

Case 2. Boy, aged six years. After a mild attack of diphtheria the patient began to have symptoms of croup.

Several days later, March 16th, 1883, death being imminent, I decided to operate and proceeeded to do so by lamp light, assisted by Dr. H. G. Murdock. The dissection was carefully made, but was exceedingly difficult on account of a number of enlarged veins, some of which were cut. The first four rings of the trachea were cut, and the canula was introduced without difficulty. Dyspnœa was immediately relieved. A spray of glycerine and aqua calcis was kept up constantly for three days and nights by means of a steam atomizer, after which time pure warm water was used almost constantly. The diphtheritic membrane could be seen projecting into the slot of the canula, and large quantities of broken down membrane were expectorated through the tube. The expectoration of the diptheritic exudations began five days after the operation. For two days the sputa contained blood, and sometimes consisted of pure blood. The canula was stopped upon the evening of the 8th day, but had to be opened again in a little while. It was closed again on the 9th and so remained till the 11th day when the canula was removed. The wound healed quite rapidly, and recovery is complete.

SANTA ROSA, Cal., May 7th, 1883.

C. A. WHEATON, M.D., Chairman Surgical Committee of Minnesota State Medical Society, St. Paul, Minn.

Dear Doctor: Your circular has just come to hand. I am sorry that I have not heard from you in time to fully report a most interesting case: A fracture of the left condyle of the inferior maxilla, the separation occurring through the neck near the insertion of the external pterygoid muscle. Result, a complete and perfect cure. Cause, direct violence, a stroke with a club, the counter

force fracturing the jaw on the opposite side near the mental foramen.

I used Ribes' method of reduction as described by Malzaine, and Fountain's method (principally) of treatment, each of whom have reported a successful case in similar injuries, and with that of my own are the only successful cases on record. If my memory serves me right there are fourteen such cases on record with but two approximating complete and perfect cures, prior to the present case. Will report the case fully for publication.

Yours truly,

A. B. STUART, M. D.,
Hon. Member of Minn. State Med. Society.

Report of Committee on Obstetrics.

WM. L. LINCOLN, M. D., CHAIRMAN.

Mr. President, Ladies and Gentlemen of the Society:

Your Committee on Obstetrics, through their chairman, beg leave to report that in following the usual plan of reports to this Society, they issued a circular letter, mailing one to each member, soliciting facts concerning the occurrence of and the treatment adopted for "Cervical Laceration," and in addition to that query asking for reports of any cases of unusual interest, that such cases might be brought before the Society for consideration and discussion, that mind might jostle mind and loose moorings be slipped until only the firm anchor-truth should secure us safe harbor.

The science and art of obstetrics must be as old as Cain, if we accept the record which cannot be rebutted on the ground that no disinterested person was present at the event. Also the scientific explorer as he proceeds with his task of unearthing the buried cities of the ancients, finds here and there hints that the doctors of that remote period were not ignorant of some of the more modern appliances of the art of obstetrics.

Something new however must be learned each passing year, and so we should bring together each his moiety of observation and experience, and by carefully comparing what we have carefully observed, we may secure for ourselves a common store of facts which are the foundation of science.

From the replies to our query concerning "Cervical Laceration" we should be led to infer that it was a rare lesion in our State, as many who have made no other reply to our circular now answered that no case has been observed by them. In fact we gain no data to learn why it should ever be found if not found in every woman who has borne a child.

Dr. Berry does report one case where he was called after twenty hours labor, where the membranes were ruptured, anterior lip swollen and rigid, head not engaged in superior strait, short forceps applied and living child delivered. Anæsthesia with chloroform; laceration bilateral to vaginal septum. In this case I believe that the rents were produced by the head forcing its way through the undilated os.

Dr. Hand replies that he has not observed a case in his own practice. In conclusion he says:

"The general health is usually impaired by the accident, but no definite train of symptoms can be wholly attributed to it."

Dr. T. C. Clark reports two cases recently in his practice.

The first case was that of a multipara. The discharge of water occurred on the 13th of April, and the child was delivered on the 16th; second stage of labor less than three hours.

Case second: Primipara, age 24, strong and healthy. Discharge of water on the 13th of May; child born on the 16th; length of second stage of labor, two hours. In both of the cases the dilating pains, so-called, continued from the time the membranes ruptured until expulsive pains began.

The Dr. says: "To my mind the laceration in each case was due to the premature discharge of the liquor amnii, depriving the cervix of its assistance in lubricating and dilating the parts."

Dr. R. S. Moore reports that he has not observed a case of laceration. He says: "It might have happened, but I did not detect it, and I do not believe that it is as frequent as some would lead us to believe it to be. There has been a little 'craze' on this subject during the last few years. I have in mind a person in whose case I diagnose a complete 'laceration of the cervix;' she never knew when it happened. She has never been conscious of anything wrong with the organ. Her general health is excellent."

This case will count one in support of the observation of Dr. Hand, viz., that "no defined train of symptoms can be wholly attributed to it."

Dr. Rosser replies: "Many patients suffering from cervical lacerations have come under my observation during the year, several of whom were among my own patients where labor had reached the third stage before my arrival and had terminated altogether. The history of all cases presented at my office for treatment has induced me to regard rapid dilatation as a very important factor in its production."

When laceration does occur in tedious labor I have grounds competent to explain the cause for its occurrence. The cervix is liable to various pathological conditions which tend to alter or modify its integrity, and it is in this condition when subjected to the forces of expulsion. This renders the lesion possible under otherwise the most favorable circumstances. As the head swings through the pelvic orbit in the fourth position, the vertex which lies posteriorly is swept rapidly along the face of the sacrum, while the anterior portion of the head is held almost stationary at the symphysis pubis, which greatly increases the tension of the posterior lip, and renders a posterior laceration possible according to a well known law in physics.

I will refer to the anterior lip, and indicate the conditions under which the lesion may occur there. The

sacrum may be either too little or too much curved, and a good curve is necessary to rotation, while a very straight sacrum must offer impediments to that act. Hence a straight sacrum will not only protract the period of labor, but will not allow sacro-coccygeal rotation to take place; and in order that the head may advance it must be pushed out under the tuber ischii, which requires an extreme degree of flexion, and thus the occipital bone passes out under the ischium, and the parietal protuberance under the pubal arch, which increases under tension in the anterior lip, and while certain pathological changes are present may cause a laceration in that direction.

Dr. Thos. A. Emmet informs us that cervical lacerations occur most frequently on the left side, but as far as I know he makes no effort to account for the fact. In the majority of labors the vertex is directed to the left, that is, we have a "first presentation;" and the head rotates when forced against the left ischial plane and thus moves forward towards the pubal arch or until rotation is fully accomplished; and now, the parietal protuberances, the right and the left, press and distend the lateral lip of the cervix; and I suggest this cause as being of sufficient importance to explain a possible reason why the lesion occurs more frequently on the left side, or is double, as Emmet intimates.

It is with much diffidence that I venture an opinion on this subject, but it affords much pleasure to know that it will be brought before the bar of disciplined reason, and then justified or condemned under the fierce light of scientific enquiry.

Thus, gentlemen, we have the views of some of the working men of our Society, and they surely afford some points for discussion, and I beg you not to seem to slight these plain challenges to discussion by ignoring them. Allow me to quote from Dr. Rosser as regards the responsibility for the lesion:

"That we should in a great measure be held responsible in many instances for this lesion there is no question. Hurry is the watchword of the day. By it we are summoned to the lying-in chambers; by it we act while there, and by it we depart. As an illustration I would mention an ordinary case. The physician is called, and on examination finds the head has sunk low into the excavation; the fontanelles are in the proper position, but it advances not at all. Pain after pain succeed each other, and yet there is no sensible advance of the head. No disproportion exists, as indicated by the finger as it glides up behind the symphysis to the superior strait, and on further examination, he finds that the cervix, which he had thought to be sufficiently dilated, has ceased for a time to yield, and during every pain takes hold of the head so as to prevent the parietal protuberance from escapiug into the vagina; and instead of availing himself of the only proper remedy,—*patience*, or ether to relieve pain until relaxation takes place,—he endeavors to dilate the cervix with the finger, or gives ergot, or resorts to the forceps. The head is born, but the cervix is lacerated. I hope it will not be thought that I over-estimate this lack of patience as manifested at the present day. I merely strip it of all vagueness and bring before you the notions I entertain with reference to the part played by us in the production of this lesion."

Gentlemen, if these were the reflections of one of the gray-headed members they might be passed by unnoticed by the young and progressive members of the Soci ety, but coming from one in the ripening stage of early manhood, they are worthy of your most deliberate consideration and discussion.

Of the reports of cases of rare interest which have been forwarded to your Committee was one by Dr. Talbot Jones, describing the causes and treatment of two cases of puerperal septicemia, treated by constant irriga-

tion. In the first case, patient had a chill thirty-six hours after delivery, at which time the temperature was 102½, which gradually rose to 104 on the third day. Intra-uterine injections of carbolized water were used with only temporary effect in reducing the temperature. Later, the temperature rose to 105¾; pulse 140, weak and thready. Mild delirium supervened and her face wore a pinched expression, while her whole body was bathed in profuse perspiration. Bowels tympanitic and extremely tender. The womb was now irrigated by a fountain syringe and double canula, with a three per cent. solution of carbolic acid at the temperature of 100° F. In twelve hours the temperature fell to 103, and twenty-four hours later to 101, from which point it returned to normal in a few days and the cure was complete. At no time were there symptoms of carbolic acid poisoning.

The second case was taken with chill on the third day after instrumental delivery, and at once the temperature reached 104½. She was treated with carbolized vaginal, and subsequently intra-uterine injections, without permanent benefit, but was permanently relieved by proceeding as in the first case.

Schrœder gave an analysis of forty cases of puerperal septicemia treated by constant irrigation, with a remarkable low rate of mortality. "Might it not be well for the members of this Society," remarks Dr. Jones, "to give this treatment a fair trial during the coming year and embody their collective experience in a report to the next annual meeting?" And we approve of his suggestion.

On this question, however, it is but fair to remark that as material for this report we have received a history of one case, which did not have a favorable termination. Dr. Dunsmore reports a case of normal labor in a multipara, which was followed on the second day by a chill and subsequent high temperature, with the usual symptoms of puerperal septicemia. The uterus was washed out

with a one-half per cent. carbolic solution; on the following morning the irrigation was repeated, but the temperature continued high, about 104°. On the third morning, when the irrigation was progressing, the woman remarked: "I hear such a strange noise in my head," and the patient expired.

The query of Dr. D. is: "What killed the woman?" and he proceeds: "Certainly the fluid did not enter the peritoneal cavity or death would not have been so sudden. One might suggest that air entered the open uterine sinuses. I think, however, that either a clot was dislodged by the stream and was carried to the heart, or some stronger part of the solution was thrown into an open sinus and carried into the circulation, producing instant death."

Gentlemen, the case is plainly set before you, and nothing essential seems to be withheld; I bespeak a candid discussion and hope I do not forestall discussion nor conclusions, if I say that to my mind the suggestion that air entered an open sinus and was the cause of death is well taken.

WM. L. LINCOLN, Chairman.
IDA CLARKE,
W. H. BYFORD, Jr.,
T. C. CLARK,
W. H. HOLLISTER,
Committee.

Report of Committee on Diseases of Children.

JAY OWENS, M. D., CHAIRMAN.

Your Committee have decided to say a few words concerning the treatment of that most fatal disease of childhood, diphtheria.

This disease has existed in epidemic form, in certain localities in St. Paul, for the past two years; a large percentage of the cases being of the malignant type. At times only a few cases would exist in the city, when suddenly a large number of cases would occur, scattered over different sections of the city, but more thickly over the low and damp districts than the high and dry portions of the town. In several instances the disease appeared shortly after the overturning of the surface earth for the purpose of paving streets and building sewers. During the paving of Fort street a large number of cases occurred on this street and in the adjoining neighborhoods.

The disturbance of the surface of the street and the exposure of lower layers of the street bed to the action of the rain and hot sun, produced a large crop of diphtheria cases when the Fourteenth street sewer was built.

Owing to the unsettled state of the pathology of diphtheria, the treatment is much diversified. Many of our physicians still adhering to the chlorate of potassa and quinia treatment, while others, believing in the parasitic nature of the disease, adopt measures which seem to them more in accord with their theory.

Among the antiseptics and antiparasitics now employed, carbolic acid and iodine stand prominently in the foreground. It is believed that carbolic acid given internally

in one-half drop doses in combination with the tincture of iodine in from two to ten drop doses, depending on the age of the patient, will very much diminish the danger of septic poisoning in most cases. During the administration of the acid the urine is to be carefully watched, and if it becomes cloudy the acid is to be discontinued and the iodine given alone.

The internal administration of the sulpho-carbolate of sodium is practiced by some with apparent good results.

Dr. Gauthier, late of St. Paul, but now of Grand Forks, Dakota, strongly advocates the administration of Lugol's solution of iodine in doses varying from three drops each hour or two to a child three years of age, to ten or twelve drops every one or two hours to an adult. The medicine to be largely diluted with sweetened water; at the same time giving as large an amount of alcoholic stimulants as the patient will bear.

This treatment is exceptionally successful in the hands of its advocate, but has only given fair results in the hands of some of its adopters. If given freely, this is excellent treatment.

Perhaps one of the very best remedies "*to give on general principles*" is the oil of turpentine; the dose being two or more drams, in emulsion, for an adult, and a proportionally smaller dose for children; the medicine to be given twice daily. Alcoholic stimulants are conceded by all physicians as being of inestimable value in this disease. Whisky is the one most frequently given. When whisky is not well borne by the patient, a change to brandy or to pure alcohol and water is often found advantageous, the patient sometimes after refusing one form of alcoholic stimulant will take uncomplainingly another form. When the heart shows signs of weakness, the prompt administration of digitalis and strychnia will often enable this organ to recover itself and to change the termination of the case. As much as a dram of the tincture of digitalis

and the one-twelfth of a grain of the sulphate of strychnia have been given at a dose, and repeated every three hours until several doses have been taken in the case of a young adult, with the result of bringing the heart's beats down from one hundred and thirty-eight in a minute to ninety-six in a minute, in the space of twenty-four hours, the patient making a good recovery.

As a local application to the false membrane, carbolic acid and glycerine, in the proportion of one to seven, will be found generally satisfactory. This mixture is best applied with a camel's hair brush. In many cases the membrane rapidly becomes white and shrivels under this application when the mixture is used every half hour or hour during the day and at intervals not exceeding two hours during the night.

Tincture of iodine is a good application, as is also the oil of turpentine. Blowing sulphur into the patient's throat will serve to keep the friends of the patient busy, and do the latter no harm.

In cases where the throat is much involved a diet of three parts of milk and one of water, taken in as large quantities as the patient will swallow, is probably the best. Small pieces of ice placed in the patient's mouth frequently, are grateful to the patient, when the throat is much inflamed and the tonsils much swollen.

The preceding is a synopsis of the treatment of the disease considered, and is respectfully offered as the Committee's report.

Report of Committee on Materia Medica

C. G. SLAGLE, M.D., CHAIRMAN.

Mr. President and Gentlemen of the State Medical Society:

Your Committee on Materia Medica respectfully submit their report with an expression of regret that it could not be made more full and replete with matter of interest to you.

The responses to circulars sent out by the Chairman have been few and brief, and it is much to be regretted that we could not succeed better in awakening more interest among our members in this important field.

That it is a department of our profession somewhat tedious and difficult to explore without time and patient experimentation all will admit, and the ingress of so much new and strange material as has been presented to us within the last few years renders it still more complicated and important; and while we have not succeeded to a very great extent in eliciting an expression from the members in regard to the value of the manifold "New Remedies" which have been recently presented for our investigation, whatever expression we have secured reflects the conservative views of our medical brethren in accepting these new agents cautiously and without an undue enthusiasm.

The few papers which we have been able to secure are hereby respectfully submitted. By your Committee,

C. G. SLAGLE, Chairman.
T. F. QUINBY,
WM. FRISBEE,
D. A. STEWART,
JAMES DAVENPORT.

The Employment of Astringents in the Treatment of Acute Bowel Affections of Infants and Young Children.

This seems to be a not uncommon error committed by medical men generally, and appears to be an empiricism or routinism which has been in vogue with many for ages past, and has not yet entirely yielded to the advanced lights of a more rational therapeutics.

If we reflect a moment on the true nature and more common causes of the bowel fluxes of the very young, whether it be any of the forms of diarrhœa or dysentery, and then consider what is really the mode of action of these agents when introduced into the stomach, we will not wonder that any such internal medication must necessarily fall far short of satisfactory results as a rule.

The prime factors of most bowel troubles of the very young are either some form of indigestion or (as a result) morbid and irritating secretions in the alimentary canal.

Will any one contend that "astringents" are capable of either correcting indigestion to any very great extent or alter morbid secretions only so far as some of them happen to possess also some secondary tonic or alterative virtues? Does it not seem reasonable that we can generally better accomplish a cure by mild, soothing laxatives conjoined with carminatives, tonics and antacids, often alternated by mild alteratives, thereby fulfilling the rational indications of treatment predicated on a rational pathology by endeavoring to clear out the irritating matter from the prima via (i. e., laxative); change the secretions to normal (i. e., alterative) and restore the tone to stomach (tonics), correct acidity and quiet pain (opiates and carminatives), and calm nervous irritation (sedatives and nervines). Does not this seem to fulfill the requisites for a rational and successful treatment? Verily, and experience will surely attest it well.

Where is the indication to be met by "astringents" (in acute attacks)—remedies which for the most part, especially in infants and young children, almost invariably tend to further impair digestion? We have often seen physicians of age and experience (especially in the South, where bowel affections are more common and serious) continue to stuff their patients with tannin, ext. logwood, alum, geranium, hamamelis, kino, catechu, tinct. of iron, sulph. zinc, plumbi act. and the like, until their little stomachs must have been literally tanned inside, and then wonder why their patients either died or resisted their treatment, until cool, bracing weather in the fall came to their rescue.

What can be more appropriate or yield more satisfactory results than a few good old time-tried mild remedies judiciously administered, as syr. rhei comp., oleum ricini, soda bicarbon., hydr. chloride mite, and conclude by a little infus gent. cardamom, hyoscyamus, pot. chloras, etc.? I have said very little about "opiates," but give them almost as sparingly as astringents, and especially to very young children. A little pulvis doveri or tinct. opii camp., of course, is often very well; but pulvis opii and morphia almost never, excepting in some cases of acute dysentery with much pain, and even then they should be given by enemata mainly and well guarded or modified by bromide of potassium, belladonna or aconite, etc.

If there be furred tongue, vomiting, sour breath, frequent and offensive stools, with much fever and great thirst, it is often good practice to administer at once a little ipecac tea, to be followed in ten minutes by hot water or hot chamomile tea. After free emesis, a little bicarb. soda and mint water may be given and mustard over the stomach. Let patient rest half hour, then give, two hours apart, calomel gr. ¼, and bicarbonate of soda, gr. 1; (this for infants under one year.) In an hour or two begin with the following mixture: Syrup rhei comp.

oz. 1½, ol. ricini oz. ½, tinct. hyoscyámi dr. 1, of which a teaspoonful may be given once in four hours; (if pain be present and the discharges are frequent, add a little laudanum to each dose.) Give a very *weak* solution of bicarb. soda or chlor. potass. to drink freely; and if the diet and hygiene are managed skillfully we may certainly expect very satisfactory results. If high fever exist with scant urine, we may give a little gelsemium or aconite and spts. nitre, dulc. or pot. acetas once in two or three hours.

If bowels remain too loose *after acute symptoms have passed*, some of the milder vegetable tonic-astringents (rhubarb and soda)—may be employed until sufficiently regulated.

To control obstinate nausea in young children with bowel affections in acute stage, I have found nothing better than very small doses of calomel, morphia and bicarb. soda every two hours until controlled.

C. G. SLAGLE.

NEW ULM, June 4th, 1883.

Dear Doctor: Your kind favor was duly received, and in reply I would say that I have had no startling or wonderful experience with any of the so-called "new remedies."

Have found the fluid extract of cascara sagrada a reliable tonic laxative, especially adapted to those cases of chronic constipation so universally prevalent among our American ladies. Its action is that of a general tonic, increasing the secretions generally and stimulating peristaltic action of the bowels. It is unnecessary to say that many spurious articles are afloat on the market, and that to these the many failures may be attributed.

My experience has been that coca relieves the bodily and mental misery resulting from the withdrawal of opium

in the treatment of the opium habit, far better than any other remedy used for that purpose; and I am convinced that we have in it a valuable adjunct to the treatment of this disease. In connection with tonics, alteratives, and laxatives, combined with a course of *moral training*, we can do very much in helping the poor sufferer to regain self-control.

I now come to a comparatively old remedy, namely, croton choral hydrate. This was first introduced to the profession for the purpose of producing anæsthesia of the fifth pair of nerves only, by that grand old experimenter, Oscar Liebreich of Germany. He says, "In large doses it produces sleep; in fatal dose, death by paralysis of the medulla oblongata." He recommended it in trigeminal neuralgia, but greatly underrated its medicinal virtues. In general facial neuralgia, or that due to carious teeth, or in that occurring in the back of the head or posterior part of the neck, I have found it to be very reliable, or as much so as quinine is in ague. It is of great value in many cases of migraine, relieving the pain almost like magic. With or without quinine, it is especially indicated in those cases of poor, broken-down, suckling women who have borne children rapidly, been over-worked, scantily nourished, and who have suffered for years with sick headache. Given in five-grain doses every two or three hours, you may confidently predict prompt relief. Again, in the same class of cases at or about the menopause period, it acts promptly and efficiently, though I need hardly say, it will not entirely prevent the return of the disease; but the immediate relief is great. I have found it to be very efficient in those nervous cases following a long continued drunken debauch, quieting the nervous system far better than potassium bromide, chloral hydrate, or any of the many different preparations of opium I do not wish to be understood as recommending it in the treatment of mania potu or delirium tremens, but only in

those cases of headache and nervous prostration following the excessive use of alcohol without any attending delirium.

However much may be said of the benefits of this remedy in the various diseases of the nerve centers, it is in dysmenorrhœal neuralgia, uncomplicated with mechanical obstruction, that its most potent effects are shown. In the young girl just budding into womanhood, the menstrual flow is often preceded by severe, yes, excruciating, pains down the thighs, in the region of the ovaries, in the back, often with vomiting from nervous reflex action, palpitation of the heart, hemicrania, etc. There is intense nervous excitement, the face may be flushed or extremely pale, the flow whitish or scanty, and in extreme cases clonic spasms of the muscles, amounting to true convulsions, supervene. In just such cases we have a most invaluable remedy in croton chloral hydrate, promptly relieving the pain, quieting nervous excitement, soothing and calming the patient, and through this means acting as an efficient emmenagogue. Where once was wild excitement, there is now calm repose; where the flow was scanty, it is now increased to normal; where once the patient's countenance was haggard, now all is serene and lovely. This is no fancy picture, but taken from the stern realities of life. If you have not already done so, gentlemen, I ask you to give it a faithful trial.

In the dysmenorrhœal neuralgia of the middle-aged it is also an efficient remedy; but bear this in mind, to meet with success it will always be necessary to closely investigate each and every case; to ascertain, if possible, the cause; and when found to remove it, as all that we claim for this remedy is a neurotic of great power for the relief of certain forms of neuralgia, more especially those referable to the fifth pair, to the uterus and the ovaries.

Hastily yours,

C. BERRY.

REPORT OF TALBOT JONES, M. D.

SAINT PAUL, May 10, 1883.

C. G. SLAGLE, M.D., Chairman Committee on Materia Medica, Etc.

Dear Doctor: Your circular letter which "respectfully solicits some expression on that department, and especially your experience with new remedies," was received on the 21st ultimo. I regret that I am not prepared to send you a paper, which I should be glad to do, since I make but little use of "new remedies." I frankly admit that I am somewhat prejudiced against them, and am rather disposed to have others, more enterprising if you like, to discover virtues, and then profit by their experience, rather than make personal experimentation with drugs of whose chemical properties and physiological action I am utterly ignorant. I believe the time has arrived when the medical profession owe it to themselves to call a halt in this matter and earnestly and resolutely protest against the indiscriminate use of so called "new remedies" with which the country is being flooded by enterprising manufacturing chemists. It is undoubtedly true that of the vast number of new remedies introduced to the profession within the last few years but few will be found worthy of a permanent place in the pharmacopœia.

In the meantime, however, enormous quantities of these new drugs are being prescribed, whose properties are as little understood by physicians as the riddle of the sphynx, and from the use of which patients deriving no good must inevitably derive harm, and thus the whole profession is made to suffer in the general estimation of the public.

But in addition to this I believe it to be derogatory to the dignity of a body of men pretending to be learned and scientific to be eagerly seizing every new drug adver-

tised in a medical journal and administering it to the sick merely upon the recommendation of the house manufacturing it, or from testimonials given to it by Drs. A. B. or C. "Weigh all things and hold fast to that which is good," applies as well to remedies as to ethics, and is quite as easily forgotten by the physician as the moralist. We hear much of the therapeutic nihilist, and but too little of a much more dangerous class the therapeutic enthusiast. The point I am trying to make is well illustrated by a painful example with which most of the members of this Society are familiar. Two years ago a wide spread and fatal epidemic of puerperal fever prevailed at a small village in the northern part of this state. A full report of the epidemic was received and read before the State Medical Society. With a charming frankness the admission was made that the sole treatment of these unfortunate women consisted of viburnum prunifolium.

Probably the only remedy of real and enduring merit which has been added to our list within the last five years is salicine and its combinations for the treatment of certain varieties of acute rheumatism.

I believe the proper attitude for the medical profession, with regard to new remedies, should be one of mingled inquiry, distrust and scepticism.

TALBOT JONES.

REPORT OF SAMUEL D. FLAGG, M. D.

ST. PAUL, April 29, 1883.

C. G. SLAGLE, M.D., Chairman:

Dear Sir: In reply to your inquiry of the 20th of March, I desire to call attention to the value of jaborandi, not so much in diphtheria (in which it has disappointed me) or in renal disorders, where its value is well established, as in febrile conditions from various causes. It has been of great service as a diaphoretic and moderate cardiac sedative in diseases attended by notable amount of fever and in inflammatory disorders of organs above the diaphragm.

During last winter prescribed it extensively in acute bronchitis, and had gratifying results in sub-acute rheumatism and epidemic influenza. It should not be employed in adynamic conditions; and where heart action is somewhat weak, small portions of brandy may judiciously be added to the fluid extract. It is a common ingredient of the expectorant and diaphoretic mixtures prescribed during last year.

Fluid extract convallaria maialis has been used by me in organic heart disease, bronchitis with weak heart, dyspnœa due to cardiac lesions, and in cases of palpitation of functional origin—preparation used being fluid extract of root in doses of five to fifteen drops.

It appears to be a cardiac tonic notably resembling digitalis; with its use pulse becomes slower and more full and steady; secretion of urine increased, dyspnœa diminished, and there is marked diminution of phenomena referable to heart failure. I cannot say that it is superior to digitalis, but from what opportunity I have had of observing its effects, consider it a valuable substitute and perhaps better borne by stomach and more prompt in its effects. It is of marked value in œdema of lungs occurring in course of pneumonia and when heart failure threatens.

In a case of mitral regurgitation now under observation, it has been most satisfactory.

A clinical report on convallaria by H. L. Taylor, M. D., covering observations in twenty cases, contains facts of greatest interest and value and may be found in "Medical Record."

The above comprises all of importance regarding new remedies that occurs to me now, unless it be one or two of the pharmaceutical preparations, which it is hardly the province of our Society to consider.

Please excuse hasty manner of my short notes, as my object has been to name what have found of value in my every-day life instead of attempting an essay on any article.

Very truly yours,

SAMUEL D. FLAGG.

REPORT OF A. T. CONLEY, M. D.

DR. A. W. ABBOTT, Minneapolis:

Dear Doctor: The case I am about to report I presume should come under the head of Materia Medica; but as I have heard nothing from Dr. C. J. Slagle the chairman of that committee, I will send the report to you, and you can turn it over to him or do with it as you please.

The case is one of veratrum viride poisoning and while it did not result fatally it came so near it that I think it has some points worth recording.

I was called April 5th, 1883, to see Mrs. D., aged about 55 years; small in size, weighing about 100 pounds I should judge; naturally not very strong and rather nervous; one hour before she had taken one teaspoonful of the fluid extract veratrum viride, thinking it was fluid extract valerian. I found her vomiting and retching

incessantly, and bathed in a cold perspiration. No radical pulse perceptible, and only able to speak a word or two at a time in a whisper. The first thing I did was to inject hypodermically sulph. morphia, ¼ gr., and then tried to get her to swallow brandy and aro. spirits ammonia, but she could seldom swallow at all, and nothing staid a moment if swallowed. Applied a strong mustard paste over the epigastrium. Soon after giving the morphia the pulse became perceptible, but she steadily sank and was soon in profound coma. She could swallow nothing. Respiration fell to six per minute, surface cold, lips blue, face dusky, pulse perceptible at 44 per minute; pupil contracted. My patient was moribund, and I expected death at any monent. But all this time I was actively injecting brandy and alcohol as fast as I could fill my hypodermic syringe. I have neglected heretofore to state that Dr. C. E. Daniels of Millbank, D. T., was stopping in town, and meeting him just before I started to see this case, I invited him to go with me, and I desire to acknowledge his valuable assistance. At his suggestion we finally injected hypodermically sulph. ether, and almost immediately the pulse began to rise, and from 44 it gradually in the next hour and a half rose to 108, then slowly fell to 85, and our patient was herself again though much prostrated.

From the time we saw the patient—11 o'clock A. M.—for she became unconscious soon after, until 9 o'clock P. M., she was in a comatose condition, at that time she was able to speak a word in a whisper, her pulse was then about 100.

This patient made a good recovery, though she had some ugly slough, resulting from hypodermic injections.

One question will be raised. Did the morphia have anything to do with producing the coma? We decided not, for these reasons: First, the dose was too small to produce such profound coma. Second, while the respi-

rations fell to six per minute they were not stertorous, but each inspiration was accompanied by something that resembled singultus, but really was the result as I believe of a partial paralysis of the pneumogastric nerve, as deglutition was impossible; and while *inspiration* was difficult, owing to the relaxed condition of the crico-arytenoidi postici and laterales muscles, allowing the rima glottidis to close, *expiration* was not interfered with materially. And third, while the pupils were *contracted*, yet one of the first things I noticed on seeing the case was that the pupils were contracted, and they were no more so *after* giving the morphine than *before*.

So my conclusions are that all the phenomena noted were the result of the veratrum, and that I came very near having a case of death to report from veratrum poisoning.

A. T. CONLEY,
Cannon Falls, Minn.

May 26th, 1883.

DISEASES OF THE NERVOUS SYSTEM.

SOME RECENT PROGRESS IN DISEASES OF THE NERVOUS SYSTEM.

TALBOT JONES, M.D., CHAIRMAN.

There is scarcely a saying that has a more general acceptance, and one withal more trite, than that medical science is advancing with rapid and steadily increasing velocity. It arrests the attention and challenges the admiration of every thoughtful physician. There can be no differences of opinion that new facts are almost daily discovered and a new impetus given to medical thought and discovery. Restless activity, unwearying research and patient investigation meet the beholder at every turn. The multiplication of specialists in medicine, though not without attendant evils, has stimulated research in various fields, and through their collective investigations the sum of medical knowledge has been greatly increased. Every appliance that humanity can suggest or ingenuity devise is now employed to control disease or prevent it.

Investigations made in experimental physiology and morbid anatomy have been so fruitful of results as to almost mark an epoch in recent medical progress.

Man is now no longer content to pursue the beaten paths of his predecessors; he brings to his aid the microscope, the chemist's retort, the thermometer, galvanism, the sphygmograph, and even spectrum analysis is made to aid him in his eager search after truth. This progress toward exact knowledge, however, is not confined to any

single department of medicine; every field is being industriously worked. There may be more brilliant discovery in one field than another, but in every one alike the laborers have caught the spirit of enthusiasm characteristic of this age, and are giving to the world their best discoveries.

Perhaps in no single department of investigation has greater success been achieved than in that of diseases of the nervous system. We have thought that it might not be without interest on this occasion to note some of the advances that have recently occurred in this important branch of medicine. We, of course, are aware of the fact that this will be somewhat of an innovation on the time-honored custom in this Society, as it is customary for the committees in making up their reports to select some one particular disease and restrict their writings and investigations to it.

There are reasons which impel us, for the nonce, to depart from this custom, the chief one being a firm conviction that diseases of the nervous system occupy a too subordinate position in the minds of physicians in Minnesota, and indeed throughout the Northwest. In England, on the continent of Europe and the eastern section of our own country, diseases of the mind, nervous diseases and electro-therapeutics occupy a position of commanding importance; not so in Minnesota. In the sections referred to some of the ablest minds in the profession are found devoting themselves exclusively to investigations connected with neurology and psychiatry, but it is generally admitted, in the Northwest these subjects excite but comparatively little interest, and their importance is underrated. Your committee, therefore, has thought that a paper on some recent progress in diseases of the nervous system, would be timely, and it is hoped that it will be the means of arousing more interest in this important department of medicine.

It need scarcely be said that to note all the recent advances, and give anything like an adequate description of each, would be altogether inconsistent with the limits of a single paper, or with your patience; therefore the subjects will be hastily treated—reserving for the last that which perhaps is of greatest importance.

Dr. Duchenne long ago directed attention to what he called *sub-acute anterior spinal paralysis*, which was characterized by the loss of power, with retention of sensation in the limbs, and followed by rapid wasting of the muscles. It differed from all acute, general or diffuse spinal paralysis which had heretofore been observed, and invariably, but slowly progressed to a fatal termination. The ultimate anatomical lesion, as in infantile paralysis, was an atrophy of the cells of the anterior cornua. In progressive muscular atrophy both the wasting muscles and paralytic phenomena are due to the shrinkage of nerve cells. Carter of Liverpool has recently published the histories of four cases of this hitherto hopeless malady cured by the hypodermic injection of strychnia, the internal use of phosphorous, and Charcot's white hot cautery applied along the spine. Other observers have since confirmed Carter's success. Closely allied to this subject is that of *infantile paralysis*. For a long time much obscurity attached to this disease, as may be inferred from its name, which implies a morbid condition of the spinal cord and observed only in children. Recent investigation, however, has revealed the anatomical lesions of the disorder, and it is now known that the same disease is not infrequently observed in the adult—the morbid anatomy of both apparently being identical. As the same form of disease, then, is encountered in the adult, the term infantile paralysis is now no longer appropriate, and the term *poliomyelitis anterior acuta*, first proposed by Kussmaul, expressing as it does the seat and character of the disorder, is the one probably by which it will be sub-

sequently known. Recent investigations in morbid anatomy have shown that in infantile paralysis the anterior nerve roots undergo a change, both at their emergence from the cord and at their termination. They become thin, translucent, atrophied, and their peripheral endings show more or less degeneration. The changes, however, of most importance are observed in the cord itself. Without the aid of the microscope, no morbid alterations are discerned, but this instrument shows in certain sections of the cord, especially well marked in the dorso-lumbar and cervical enlargements, the nervous substance to have undergone inflammatory softening, separation of nerve cells, and the presence of granulation corpuscles and free nuclei. The multipolar nerve cells in the anterior horns of the gray matter are shrunken, many of them markedly atrophied and all in a state of atrophic degeneration. Coincidently with these changes there occurs a decided hyperæmia of the cord—most of the blood vessels being distended to twice their former calibre, with more or less serous exudation into the substance of the marrow, and a hyperplasia of the neuroglia. The cord is not uniformly affected by these changes; they occur only in certain areas or patches. The softening may be observed on one side only, but in severe cases on both. This atrophic degeneration is not always confined to the anterior horns of the gray matter, but may extend to the adjacent antero-lateral or even posterior columns. The muscles supplied by these nerves undergo a marked change. Individual muscular fibres may disappear, and most of them become degenerated; fat-cells and granules appear, and there is a marked proliferation of the connective tissue. "Important changes occur in the joints; the articular surfaces are atrophied and eroded, the ligaments thinned and stretched, and the articulations relaxed. By reason of these great deformities, the worst forms of club-foot are produced." All of these facts regarding the morbid anat-

omy of *polio-myelitis anterior acuta* have been acquired in recent times, for in no systematic work on practice, unless written within the last year or two, will any description be given of its pathology.

Athetosis, allochiria (Med. Record, 1881,) and pseudo-hypertrophic spinal paralysis have recently been added to the list of nervous diseases, for a description of which we search medical treatises in vain. One of the most important articles that has appeared for years is a paper of Da Costa and Longstreth (Am. Jour. Med. Sciences), who, after an exhaustive investigation of the subject, have arrived at the conclusion that all the morbid processes embraced under the generic term of Bright's disease of the kidney are directly due to antecedent structural changes in the great abdominal ganglia of the sympathetic. The nature of this nerve change is akin to, if not identical with, fatty degeneration. They show that the neural change is primary and causative, the alterations in the kidney being secondary.

Localization of cerebral lesions has been largely studied, and attracted great attention, during the last decade, and very decided advances have been made in this subject, which still continues to engross the attention of the medical profession. Our increased knowledge is due to investigations in morbid anatomy and experimental physiology, and also to clinical observations. The important investigations made by Fritsch and Hitzig in 1870, by electrization of the cerebral hemispheres in the lower orders of animals, gave results of capital importance. These experiments, which at once attracted great attention to the subject, were quickly followed by those of Ferrier, though the latter were far more comprehensive in their scope and valuable in their results.

Other workers soon began to labor in the same field, and the result of the investigations of Broca, Schiff, Vulpian and others is now well known to the scientific world.

Owing to the fast accumulating knowledge with regard to localization of cerebral lesions it is highly probable, if not reasonably certain, that the day is not far distant when this subject, taken from the domain of speculation, will become one of the most exact sciences of our art, and when the skillful physician will be able to determine with as much certainty the nature and seat of cerebral lesions as he now does morbid states of the lungs or valvular disease of the heart.

Only a few years ago Ord, Mahomed and other English physicians called attention to a certain curious form of disease, characterized by more or less diffuse swelling of the entire body, but especially prominent in the lips, tongue and eyelids. Its most characteristic feature, however, was a *cretinoid* state supervening in adult life in women. In this country thus far there have been but three cases reported. In the cases examined the speech was deliberate and slow, hearing impaired and the mental faculties obtuse. The finger ends became club-shaped and the bodily temperature was below the normal. The swelling of the body did not pit on pressure, as in advanced cardiac or renal disease, and there was an absence of albumen in the urine. The thyroid gland was always markedly atrophied, and in many cases had disappeared. From the swelling of the body, mental decay, thyroid atrophy and change in facial expression, Sir William Gull, who first described this disorder, came to regard it as a disease closely allied to a form of imbecility long ago recognized in Italy and Spain, and known as *cretinism*. The disease is slowly progressive, confined to adult life, chiefly observed in women, and most frequently seen in those who have borne many children. With regard to the etiology of *myxoderma*, the name by which this curious disorder is now known, little positive can be said, though Allen McLane Hamilton, in a recent able article (New York Medical Record, December, 1882), has apparently

proven that the true seat of the disorder is in the deepest recesses of the sympathetic nervous system.

Charcot, Vulpian and others (*arch: de neurologia*) have lately directed attention to certain skin eruptions which appear in cases of *locomotor ataxia*. These eruptions may be ecchymoses, papulæ or maculæ but are not observed in every case of tabes, nor indeed in a majority of cases. The eruptions are not observed before or during a paroxysm of pain, but immediately after, and appear over the seat of greatest pain and follow the course of the spinal nerves. They vary in size from that of a split pea to that of a silver half dollar, and resemble the spots which result when the skin is severely pinched. Strauss regards these eruptions as of frequent occurrence in ataxia, and intimately connected with morbid alterations of the posterior columns of the spinal cord. He thinks they are reflex phenomena (irritation of the vaso-dilators).

While on the subject of posterior spinal sclerosis some curious investigations recently made by Tuczek may be mentioned.

He had the opportunity to study an epidemic of ergotism and found in many of the patients tabes dorsalis was produced artificially by this drug. All of the cases showed symptoms of ataxia, parasthesia, pains, inco-ordination and complete absence of tendon reflex.

Post mortem examination in four cases showed sclerosis in the posterior root-zones, though no change was observed in the columns of Goll. Dogs were now fed on ergot to see whether or not the disease could be produced artificially. They grew rapidly thin, and showed signs of inco-ordination, but on being killed no lesions were found in the cord. Other recent progress connected with this subject are some observations of Vulpian (*Revue de Medicine No. 2, 1882,*) wherein he shows that in certain cases of locomotor ataxia epileptic phenomena are observed. In the cases reported the subjects had attacks of

loss of consciousness, right side hemiplegia, aphasia and laryngeal constriction, all of which symptoms subsided when decided tabes made its appearance.

The pathology and physiology of the *cortex cerebri* used to be, and to many physicians and students is still, regarded as a *terra incognita*. The inherent difficulties in the study of this subject have heretofore appeared almost insuperable, hence but little additional information has recently been acquired concerning its functions. Important investigations, however, have lately been undertaken by Prof. Goltz of Strasburg, who experimented on the cerebral hemispheres of dogs, by means of White's boring machine. His general conclusions are best given in his own words:

(*American Journal of Insanity.*) 1. The hypothesis of circumscribed centres for special functions in the cerebral cortex is untenable. 2. There is no area of the cortex exclusively concerned with sight, hearing, smell, taste or touch. 3. It is impossible by any circumscribed lesion of the cortex to produce permanent paralysis of any muscle, or remove it from the influence of the will. 4. The vital manifestations which we regard as indicative of intelligence, feeling, emotion, instinct, are not dependent on functionally differentiated cortical regions. 5. Destructive lesions of the frontal regions of the hemispheres cause defects which differ in certain respects from those caused by lesions of the occipital regions. These differences depend, probably, on simultaneous lesions of the conducting tracts which lead to the crura. Removal of the anterior regions shows itself in clumsier movements, and reduced tactile sensibility; removal of the hinder lobes more distinctly affects sight and other specialized senses. The general intelligence is also somewhat more affected in the destruction of the hinder lobes.

The etiology of *pernicious anæmia*, which is essentially characterized by a rapid and progressive diminution in

the number of corpuscles with symptoms of profound anæmia, is still involved in much obscurity, while the cause, whether nervous or myelogenous, is still *sub judice*. Dr. King has lately ably advocated the idea that the etiology is to be sought in lesions of the sympathetic system, while Little maintains that the primary cause is a change in the vaso motor region of the ganglionic system—the alterations in the blood being secondary.

Brigidi, it may be remarked, actually found in one case of pernicious anæmia a lesion of the cœliac plexus.

This, however, may be of little value, as Marcacci found similar nerve changes in diffuse eczema; Morselli has noted their occurrence in glio-sarcoma of the brain; Pio Foa in cholera, and Panicore in general paralysis of the insane.

If time permitted the influence of anæmia (not pernicious) on *the electrical irritability of the cerebrum* would be shown. Only this can be said, as a result of Munk's series of experiments on dogs. The abstraction of less than one-seventh of the total volume of blood of the animal does not modify the excitability of the psychomotor centres of the cerebrum. The loss of one-seventh to one-fifth of the entire volume of blood increases the irritability. As the irritability is diminished he becomes partly narcotized, though the power of voluntary movement remains. These changes are not dependent upon lowered blood-pressure, but act through lowered nutrition of the brain.

Only the briefest resume can be given of the *progress in static electro-therapeutics* during the last year. It is generally employed, and often with conspicuous success, in certain varieties of palsy where other forms of electricity have failed, as in hemiplegia, in the so-called irritable spine and in sub-acute rheumatism.

Dr. Morton, of New York, has used it with benefit in diphtheritic paralysis, Bell's paralysis, muscular atrophy,

neuritis, angina pectoris, anæsthesia, etc., though he found it unsatisfactory in locomotor ataxia.

The time has not yet arrived for a positive opinion to be expressed as to the value of *nerve stretching*. This procedure is still on trial—in a transition state—and its future is merely conjectural, though it may be remarked that the enthusiasm it first aroused has in a great measure subsided, and the preponderance of opinion now appears to be against it. Though much has been written upon this subject certain physiological questions still remain unanswered. Space forbids a mention of but two: (*a*) By stretching a nerve what influence is exerted on the nutrition of the cord? (*b*) What influence does stretching a nerve have on the vascular mechanism, and if any, through what kind of nerve-fibres, and in what way is this influence manifested? These and other important questions cannot be evaded and will have to be definitely answered ere the medical profession are at all likely to give their sanction to nerve-stretching.

After thoroughly sifting the chaff from the wheat this much appears to have been proven: 1st. That after stretching a nerve, paralysis of sensation is more pronounced than paralysis of motion, although the latter is more persistent than the former. 2d. That the effects upon the cord (anatomically speaking) are negative. 3d. That the excitability of the nerve trunk is modified, or may be temporarily destroyed. 4th. That stretching a nerve not only acts upon itself but likewise has an action upon the nerve of the opposite side. 5th. That the cohesion of the nerve-sheath or nerve fibrils is affected by the nerve sliding in its sheath, thus breaking up the adhesions and relieving the nerve of pressure. 6th. That there may be a rapid coagulability of the medullary sheath, a separation of the sheath from the neurilemma, or a solution in the continuity of the axis-cylinder and medulla, as a result of the violence done. 7th. That the best results

from nerve stretching are obtained not by feeble and sudden, but by vigorous and prolonged stretching.

We now come to speak of a subject which in our humble judgment is by far the most important yet alluded to, and here the most brilliant advances have been made. The investigations in *cerebral syphilis* mark an epoch in recent pathology. Much that will be said under this head has been used on another occasion.* When we remember the great antiquity of syphilis, it having been described according to good authority in Chinese systems of medicine 4,500 years ago, it is truly surprising that its ravages in the nervous tissue should have received their true interpretation only within the last twenty years, and that the greatest progress and most important additions to our knowledge of its pathology and symptomatology has occurred during the last decade. Indeed it is only since the former period that syphilitic lesions of the cerebrum have had a nosological existence.

The far-reaching and beneficent effects of these discoveries are all the more important, since of all the organic lesions affecting the meningeal or cerebral tissues those due to the syphilitic poison are by far the most amenable to amelioration and cure.

Until recently our knowledge of the affections of the nervous system caused by syphilis was fragmentary and incomplete, yet much has been learned in the last few years.

Owing to recent researches made by Virchow, Yraren, Ricord, Lancereaux and many others, a syphilitic neoplasm of the brain may, at the present time, be determined with as much accuracy as a lesion due to sclerosis or a non-specific tumor. The specific lesion may be situate in the cerebral parenchyma, in the membranes, the dura mater, or the internal surface of the cranium, under

*A paper read before the Ramsey Co. Med. Soc. Oct. 30th, 1882.

the form of tophus, with more or less abundant osteophytes or as characteristic osseous cicatrices. Wherever situated, it manifests itself chiefly as gummata, tumors, patches of softenings or thickenings. Chronic interstitial indurations may develop tough adhesions of the dura and pia mater, and increased consistence of the brain. In chronic inflammation of the dura mater, sometimes infiltrated with osseous products, the affection usually takes the form of external or internal pachymeningitis. Increased thickenings of the membrane may result in firm adhesions to the cranium and subjacent meninges. Various retractions produced by chronic meningitis occur with exudation of connective tissue products, causing strangulation and partial atrophy of the cranial nerves at the base. Meningeal syphilis may take the form of syphilomata. In their minute structure these tumors appear either rounded prominences composed of soft infiltrations, reddish, consisting of spindle and stellate cells, or as round cells with neuclei distributed through the tissue of the part, or irregular neoplasms of a gray color disseminated throughout the new-formed connective tissue. These syphilomata vary in size from that of a pea to that of a hen's egg. To the naked eye they differ in appearance from the neoplasm of fibro-cellular tumors or tubercle. (*Wargner Arch. Heik, 1865.*)

According to Reinfleisch, syphilomata develops in the brain at the expense of the lymphatic sheaths and along the blood vessels, and they produce spots of softening by compression of the vessels and arrest the circulation. A great number of cells may be densely packed in an interspace, forming an alveolar arrangement.

The neoplasms contain capillary blood vessels, but sometimes they are dry and yellowish and undergo a cheesy transformation. They may undergo liquifaction and result in the loss of substance or the formation of a cavity. There may be thickening of the ependyma and

small foci of fatty degeneration in the ventricles, which become enlarged. (*Rosenthal.*)

According to Charcot, syphilomata rarely occur in the cerebral parenchyma. A favorite site of this gumma is between the two layers of the dura. The gumma nodules may develop on the convexity or at the base of the brain; when in the latter situation they may fill up all the inter-spaces around the pons, crura and chiasm. They may give rise to hemorrhagic softening, partial sclerosis or incomplete liquefaction of the cerebral substance with which they are in contact. The brain is softened near the indurated spots, through defective nutrition from impeded flow of blood in the diseased vessels. Specific meningitis may accompany circumscribed cerebral inflammation or "may follow in the train of syphilitic tumors."

Westphal has observed syphilomata in the white subtubstance of the optic tracts, the pons, pituitary gland, and the cerebellum.

It is only within the last few years than anything was known of the effects of specific disease on the blood vessels of the cerebrum. Science is indebted chiefly to Heubner of Leipzig, who in 1874 first recognized and explained the importance of syphilitic neoplasms that develop in the arteries of the brain. The arteries thus affected are thickened, hard, almost cartilaginous in consistence, lose their transparency, and assume a grayish or whitish-gray color.

The changes thus wrought are due to the deposition of granulation tissue in the tunics of the vessels, their starting point being in the intima or between the elastic layers of the internal coat and endothelium. According to Heubner, this process is not specific in its nature, since the cells are similar in structure to those of certain sarcomata and gliomata. Owing to the interposition of cells the endothelium becomes thickened and the interposed cells

become compressed and flattened, and fusing become giant cells. The lumen of the vessel is encroached upon and its calibre diminished by one-fifth or one-third. Small round cells probably derived from the vasa-vasorum produced by irritation now appear, or they may first be semi-lunar in shape, and subsequently become circular. These changes are observed chiefly in the larger arteries at the base of the brain. No disease of the veins has yet been noted. This new formed tissue develops toward the center of the vessel and obstructs the blood current, as the vessel's longitudinal axis is diminished. Rosenthal (*Diseases of the Nervous System*) remarks that the obstruction thus produced may give rise to thrombosis, cerebral softening and endo-arteritis. Syphilitic endo-arteritis may cause complete stenosis of the artery, or multiple thrombosis, or emboli, and result in grave disturbances of nutrition and circulation.

Many vessels may be involved and in various degrees. The small ones may rupture with apoplectiform attacks; may contain microscopic aneurisms, or may become completely obliterated. The distinctions between syphilitic endo-arteritis and atheroma are these: in the latter, the calibre of the vessel is seldom diminished, in the former, the lumen is lessened to a degree that may cause stenosis; in the latter, only a few vessels are involved, in the former, a large number; in the latter, calcification may ensue, never observed in the former; and finally the latter is incurable, which is not always true of the former.

But this paper, which we know has taxed your patience on account of its unreasonable length, must be brought to a close without anything being said of recent discoveries in central myelitis, post-paralytic chorea, the hereditary form of tabes dorsalis, and other diseases; or mentioning some recent progress in neural therapeutics, physiology, and electricity.

CASE I.

A CASE OF GLOSSO-LABIO-LARYNGEAL PARALYSIS.

BY DR. JAS. H. DUNN, SHAKOPEE.

Andrew S., a large, powerful, married Swede, 40 years of age, had been a very hard drinker of alcohol, whisky, etc., etc., often lying dead drunk in the gutter. In the intervals of his sprees he was also a very hard worker, chopping cord wood and clearing a new farm. He knew little of his ancestors, but a ten year old daughter has light epileptic attacks. During the summer of 1880, he was treated by Dr. Manson of this place. He then complained of a good deal of pain in the back of his head and claimed to have "weak and dizzy spells," which greatly alarmed him. He was pretty ignorant, gave poor descriptions of his ailments, and said he had "music" in his ears. There was a tendency to constipation. He was a voracious eater and his appetite and digestion remained good as long as he could swallow food. All the summer of 1880, he was unable to do hard work, as it brought on the "spells more." No note was taken of any clumsiness of speech or other paralysis.

During the winter and summer of 1881, he was much better and called very little for treatment, though he had the same symptoms in a less degree, but did his farm work.

In August 1883, after a hard days work at stacking grain, under a remarkably hot sun he became dizzy, ate no supper, and about 7 o'clock P. M., fell down in a sort of epileptiform fit. His physician, Dr. Manson, arrived about 11 o'clock, and taking it for a case of congestive apoplexy from exertion in the hot sun, bled him

freely: about 12 o'clock he awoke from the fit conscious, having been unconscious for five hours. The pulse was slow and full, pupils normal, breathing quick, and snoring, and there was some little frothing at the mouth. He did no more work, but kept about the house for the next three weeks with a dull pain in the head, some general weakness, loss of reflex-sensibility in tongue and fauces, costive bowels and excellent appetite; but he had frequent slighter attacks, during which a peculiar sensation went through him, as he expressed it, as if he was going to die and he appeared to partially faint.

Gradually the tongue became thick in talking and soon after he found difficulty in swallowing fluids. He now went to bed and remained there until death. At this time I was called to see him. The power of articulation was gradually lost, at first the lingual sounds were deficient, later the labials, and a few days before death I could not understand him at all. Difficulty in swallowing increased, until a few days before death no food could be taken. During the last three weeks of life he was unable to pucker the lips, and the lower part of the face was expressionless, but not drooping, and he could bring the lips together. There was no perceptible increase in the salivary flow. The pulse became at last quick and irregular, and he suffered much from peculiar sinking spells which seemed to arise from interference with respiration and circulation. At last unable to speak or swallow, he died evidently of paralysis of the heart (no physician was present), six weeks after the epileptiform fit, which marked the first active onslaught of the disease, though premonitory symptoms had been present for two years. No autopsy was obtained.

Such is the meagre description of the facts in the case as they appeared to Dr. Manson and myself. We were and are somewhat at a loss to know what the diagnosis should be. The symptoms can only be

accounted for, in my opinion, by progressive bulbar paralysis; whether it was the true glosso-labio-pharyngeal paralysis of Trousseau, I am by no means certain. It is evidently not a typical case as described in the ordinary text books, or such as I have seen in the clinic of Dr. Hammond. After the paralysis became apparent the course of the disease was remarkably short; only six weeks. There was tinnitus aurium, an unusual symptom, and the intelligence appeared to me to be somewhat obscured, but it may have been but the result of loss of speech in an originally unintelligent man. There was no atrophy of paralyzed muscles, but it could not be expected in so short a time. Impaired deglutition did not prevent taking food early enough to cause much emaciation. But the unusual course of the disease might be due to early implication of the innervation of the heart and lungs, by which I would also account for the early attacks of the peculiar syncope. The absence of paresis of the limbs or marked interference with intellection; normal condition of special senses (except the tinnitus), and of the rectum and bladder, good digestion and appetite, would go to confirm the diagnosis which heads these notes.

CASE II.

A Case of Sporadic Cerebro-Spinal Meningitis.

I believe sporadic cases of cerebro-spinal meningitis are regarded as rare by most authorities. This fact, together with other peculiarities of the following case, induce me to send you a copy of my notes:

Arnoldof V., a German lad of eleven years, after exposure to cold all day with wet feet and legs, awoke about midnight with terrible headache and "pains all over." During my absence from town the father called Dr. Entrup,

who attended until the 24th. Dr. E. found the patient with a temperature of 103, pulse 100, severe cephalalgia, rachialgia, and pain in the limbs, nothing abnormal about eyes or ears. He gave morphia hypodermically and bromide of potassium until pain was eased, but as soon as narcotism at all ceased he began to cry out from pain. On my return on the 24th I visited the patient with Dr. E. The headache was very peculiar. The boy would lay for a few minutes without crying, but on being asked said he had bad pain in the head, back, limbs and bowels; he would cry out suddenly from the increased throbbing pain in the frontal region, continuing for two or three minutes, when the pain became more bearable and the crying ceased. These exacerbations occurred every few minutes and had done so from the first. There was hyperæsthesia and hyperæmia of the skin; drawing the finger across the body caused pain and left a mark which was slow in disappearing. All the muscles were slightly stiff, the beginning opisthotonos was barely noticeable; there had been frequent vomiting from the beginning, bowels costive, temperature about 103°, pulse 55 to 60. 15 gtt. fl. ex. ergot and 15 gr. potassium bromide were given every two hours, with rectal injections of chloral hydrate as needed to control pain.

25th.—Boy was nearly rigid, head drawn back, had been all day delirious and was becoming unconscious; pupils dilated, pulse 55. Treatment continued with fly blister from ear to ear.

26th.—Boy was better, conscious, but cried nearly all the time from pain; neck not so stiff.

From Feb. 26th until March 7 he remained in about the same condition, almost never sleeping, eating only now and then a spoonful of beef tea, and suffering terrible pain, despite the free use of powerful anodynes, but the head symptoms never became as bad as on the 25th. Vomiting

had mostly stopped. There was at no time any eruption upon the skin.

March 7 he began to suffer terribly with pain in the lumbar region and in his lower extremities. It took considerable force to straighten his legs, causing great pain in muscles, skin and joints. A blister was applied to lumbar region; but boy got worse and worse till March 10, when he lay nearly unconscious, muscles rigid, pupils dilated, taking no nourishment and getting no sleep. We were now sure the patient must soon die. The treatment at first enthusiastically carried out was later more or less neglected by the despairing father, who at last lost faith in treatment, and his physician ceased to prescribe; and he was not again visited until the 16th of March. He lay in much the same condition, emaciated almost literally to skin and bones, the only difference being that since the 15th he had had no pain. Thus three weeks after the attack the pain suddenly disappeared, and it appeared possible that the patient would disappoint us by recovering after we had for two weeks looked hourly for his death. For the next week he lay barely alive, taking an occasional spoonful of beef tea or milk. At the end of the fourth week he had not perceptibly improved, except that he was painless, slept a good deal, and was not stiff. He was nearly a skeleton, and the bowel and bladder, which up till noon had operated involuntarily, became more controllable. The fifth week he gained some strength and looked brighter.

Sixth week: appetite good and he ate often, but with great care. Of late he had been vomiting in the morning, even before breakfasting. I suggested still greater care in eating and prescribed a bottle of maltine with pepsine, a tablespoonful to be taken after meals four times a day. He slowly improved until the tenth week, when he was able to be out of doors. All his senses good,

apparently sound in every way, but weak. He is now daily improving.

But one other case occurred during the year in this vicinity. In that case, a young German woodchopper, aged 22, who died: it would also appear as if exposure to cold was the cause. At least he went about all day with very wet feet and took a severe cold. During the winter of 1881, I saw two well-marked and fatal cases apparently due to great exposure. One, a young man, danced all night in a hot ball room, went out into extreme cold with light masquerade costume, walked a mile, and lay down till morning on the cold floor; suffered severe headache next day, had a typical case of cerebro-spinal meningitis, with opisthotonos, and died on the third day. The other, a green German, took off his boots and waded a stream of ice water in March, and next day was attacked, dying comatose on second day. However, there were several other cases in 1881 about the same time as these two, and there may have been some epidemic influence acting as a cause, and the exposure have only been a factor in the causation. My limited experience would lead me to believe that sporadic cases of cerebro-spinal meningitis may arise from exposure to cold, or at least that such exposure may be an important factor in the causation of such cases.

CASE III.

A Case of Right Hemichorea.

B. Rein is a tall, muscular young German farmer, of good health and habits, aged nineteen years, with no history of nervous disease in his family. Nov. 11th last he began work in a brewery washing malt tubs, where he stood all day in water alternately hot and cold in his bare

feet. In the evening of his first day's work he felt a peculiar sensation in his right side. At breakfast next morning he was unable to feed himself with his right hand from loss of power and involuntary twitching. He now also felt that an exact half of his body (the right) was numb. The use of the leg was badly impaired and the arm much more so. Getting progressively worse until December 15th, his arm and leg were nearly paralyzed for all voluntary motion, but involuntary twitching was very marked. He could walk only with difficulty; and Dec. 27th he applied to me. I found the loss of power and feeling to be very marked, and the tongue was deflected to the right in protruding; however, I could detect no paralysis of muscles of the face; he felt numb, though, in an exact half of the head. There was constant and at times excessive twitching of muscles of arm, and in a lesser degree of the leg. He was given 1 dr: of the elixir of beberina and iron. By Jan. 6th he was much improved and began to apply the Faradaic current along the spine and through the muscles of right side, still taking the elixir. Jan. 17th he thought the arm and leg about as strong as ever, but the twitching was in no wise improved. From the latter date until May 1st he remained in about the same condition, i. e., the hemipegia had recovered but the hemichorea was neither markedly better nor worse, since which time I have not heard from the patient.

There was noticeable depression of intelligence. Speech was not affected, so far as I could ascertain, though he had a hesitating way of talking and could not be induced to say much.

This case of a young man, the picture of health, attacked within a few hours of such marked exposure to influences which tend to congest the brain, seems to me to leave little doubt: 1st, That the disease was of cerebral origin—a proposition sustained by the complicating hemi-

pegia. 2d, That there was a casual relation between the exposure and the disease. 3d, That if this be granted the cause must have acted either by congestion, inflammation or extravasation of blood in certain nervous centers. Whatever may be the cause of chorea, there can be no doubt but that it is generally of cerebral origin and due to some disturbance or irritation in the region of the optic thalamus or corpora striata.

Charcot has found a collection of blood as large as a nut in the posterior half of the optic thalamus, etc.

In a hemichoreic subject, vide Ziem. Cyc., p. 452: The disturbing element is doubtless varying in different cases. It may be the capillary emboli, blood clot, congestive or inflammatory changes, or perhaps more frequently changes so delicate as to defy detection in the rare cases where autopsies are made.

CASE IV.

A Case of Hysteria in the Male.

Geo. P., aged 30, is married and a father of three children. He was reared on a farm but has been for a couple of years floating about doing odd jobs, and much of the time idle. He had often consulted me about certain obscure pains and hypochondriacal symptoms, for the relief of which he had applied to a score of physicians. Having been long out of employment, in March, 1882, he obtained a lazy man's job and ceased to complain all summer. Nearly a dead beat, his family supports itself mostly. His mother, now dead, had been nervous, hysterical, and "acted queer" sometimes, and the son has been all his life "complaining." He takes poor care of himself. On cold days goes out of hot room in his shirt sleeves. He does not drink excessively. Have never

known him to get drunk, though he lounges about saloons a good deal. November 28 last he took a very bad cold and had an attack of acute bronchitis, for which I visited him several times; as he was recovering he applied to me to procure an abortion on his wife; being refused, other physicians were called upon and declined. Both patient and physician were somewhat disgusted with each other, and he became moody, grunting a good deal, sending often for me, but acting sullenly when I came.

December 3, about 12 P. M., he became violent, and when watchers tried to hold him he had spasms of all the muscles, straightening himself out and throwing the head back; did not foam at mouth; appeared to be unconscious and answered no questions. Pulse and temperature normal. When I came he would not speak to me except to grind out a feeble "yes" or "no." As his father minutely described the symptoms and said, "now he is going to get a spasm," they commenced, and the long continued muscular exertion was quite wonderful. The spasm began with violent struggles to get up or strike attendants; being restrained, this was followed by a tonic spasm of all the voluntary muscles, lasting five or ten minutes, gradually passing off, after which he would act stupid for several minutes, but answering now and then with an inarticulate grunt. At the beginning of his "spells" he would shout "hold me, hold me," spring up, strike and kick. When held down by three or four men he would straighten out, resting almost on head and feet, with hands and teeth clenched. He struck wildly at attendants but never hit any one but a boy. A blister was applied to back of neck, and morphia, chloral and bromide of potass. were given, and he was treated with little sympathy greatly to the disgust of friends. At first he rested well the latter part of the night and every morning I found him propped up in a chair smoking cigars furnished by his admirers. He declared he had a villainous

appetite, ate literally nothing; but his wife privately admitted that he consumed remarkable amounts of chicken and other (to him) unusual luxuries, especially when no visitors were present. From December 3 to 6 he had these spasms very often, from evening until towards morning, a time during which he was usually attended by four or five friends. He often had them every hour, oftener or more seldom. As the watchers left about 4 A.M. he became more quiet, rested till 9 A.M., breakfasted bolstered up in a couple of easy chairs, and on my arrival in the morning was usually enjoying his cigar, with a woeful countenance. The convulsions were at one time so bad that I feared I had made an erroneous diagnosis, suspecting the possibility of tetanus, and called in Dr. Manson, who at first was at a loss as to what to think of the fellow, but after a few visits concluded the trouble was hysterical. His friends hearing of the "terrible case" flocked in to see him bringing offerings of cigars, wine and sympathy, four sitting up with him each night. When many were present he had "terrible fits." By the 10th I felt safe enough of my diagnosis to take a still firmer stand as to moral treatment, and calling Dr. Manson held a grave consultation within the patient's hearing in the adjoining room, at which it was decided: 1. That he was to have no more visitors, no cigars, less food and no wine till the spasms ceased. 2. That his back must be extensively blistered. On hearing this, though unable to speak except to grunt feebly when we came in, he said with much energy and profanity, "no you don't blister my back again." From the 10th to 15th he had a few light attacks of the spasms, but complained more of pain in back and right testicle and general weakness. By January 1 he was around again, since which time he has not consulted physicians much. He moved early this spring to a farm, and now, May 15, appears well. I may add that he is a rather lean man of about five feet seven

inches high, and muscular, with a dogged despondent look. The case was a novelty to me, for though authors say hysteria in the male is far from rare, I think well marked cases in married men of the patient's age are not often met with in Western country districts, and though I have met with other cases, I have never seen such convulsions.

THE TREATMENT OF EPILEPSY.

BY GEO. H. KNIGHT, M.D.

Few diseases that come under the notice of the general practitioner demand more careful attention, and more skillful treatment than epilepsy. And the thought, that in spite of all efforts paralysis or idiocy may ensue, makes every physician interested in his profession desirous of doing his utmost to eradicate this dread disease. It is not my purpose to enter into a description of the different forms of epilepsy now known to the profession, but I shall confine myself simply to its treatment. As you all know, the bromides are the remedies chiefly relied upon. But successful treatment by no means consists in indiscriminate dosing with these drugs. On the contrary, the most judicious use of them is demanded, as they must in every case be continued for a long time, a fact which makes it imperative that the physician should see his patient as often as every two or three weeks, at least, that all ill-effects may be guarded against. The bromides are generally given in combination with a tonic. Dr. George M. Beard gave bromides one week and tonics the next, or bromides at night and tonics during the day. Dr. E. C. Seguin has four special prescriptions, and in some institutions where epileptics are received, they have

been adopted and are kept constantly on hand and dispensed. The first is termed the "house solution," bromide potass. grs. 10 to aqua fl. oz. ½. The others, termed "Seguin mixture Nos. 1, 2 and 3," are as follows:

No. 1.—Bromide Ammonia, - - - - - oz. ii
" Potass. - - - - - - oz. iv
Aqua, - - - - - - - f. oz. xxviii

No. 2.—Bromide Ammonia, - - - - - oz. ii
" Sodium, - - - - - oz. iv
Aqua, - - - - - - - f. oz. xxviii

No. 3.—Chloral Hydrate, - - - - - oz. ii
Bromide Potass. - - - - - - oz. iv
Aqua, - - - - - - - f. oz. xxviii

These are given in doses of from one to four teaspoonfuls in an alkaline solution.

The favorite and perhaps usual prescription of Brown-Sequard is a combination of the bromides of potash and ammonia, with the addition of an alkali and a tonic. The point of bromization to be attained varies. Some prefer the medium effects, while others push the medicine until the rash appears, even then continuing in smaller doses. I cannot but think that in many cases the severe effects are not required; or that the results would be just as good by keeping the person thoroughly bromized without producing a condition which of itself might demand special treatment. Just here let me add, that one of the best antidotes to bromization is powdered citrate of caffeine in doses of 3–5 grains. Quinine is also good, while strychnia hypodermically administered is often very satisfactory in the hands of a physician.

Oftentimes it is advantageous to make a change in the form of bromide used. Bromide of zinc, either alone or in combination with nux vomica, is very good. Hydrobromic acid in fifteen to thirty drop doses three times a

day is also effective in many cases. Hammond states that in several cases where he had failed with large doses of the bromide "spasms were arrested when the oxide of zinc was given in addition." In some cases, where the bromides act as excitants, other drugs can often be employed with good effect. An epileptic whom I saw some years ago, and who could not take the bromides, was given ten-drop doses of the fluid extract of conium with two drachms of the comp. tinc. of Peruvian bark three times a day for one year, with the pleasant result of moderating and largely controlling the force and frequency of the spasms and almost entirely abolishing the epileptic furor which in her case usually preceded the convulsion for twenty-four hours.

In another case, tinc. of stramonium in five-drop doses three times a day prevented all spasms for a period of eighteen months.

Nitrite of amyl is used to avert spasms, but my experience has been that when the preventive effects of this remedy pass away the seizure generally takes place. It is, however, very useful as an immediate preventive.

In cases of nocturnal epilepsy, in addition to the bromides, hypodermic injections of morphia and atropia are very serviceable. Oftentimes when a patient has had a series of fits and is devoid of all energy, small doses of morphia produce good results.

In treating the various cases that have come under my care, I have found that the methods pursued by my father, the late Dr. H. M. Knight, of Lakeville, Ct., have proved the most successful in every instance, viz., the use of the smallest doses possible to keep up thorough bromization without injuring digestion or producing any ill effects, combined with unremitting care and watchfulness in regard to diet.

A short account of a case in which this method of treatment has obtained remarkable results may be of interest

to you. E. L., came under my care four years ago. The history stated that he was a smart, bright boy until ten years of age, when he fell from a tree, striking upon his head. From that time he had grown steadily worse. Paralysis was marked, but he was rational and coherent. Speech was wanting because of his condition. He had apparently no sense of taste, but would eat wholesome food, sand, sticks, strings and rubber balls, with equal avidity, if they were within his reach. He was put upon—

Bromide Potash, - - - - - -	dram ii.
" Ammonia, - - - - -	dram iii.
Tincture Columbo, - - - - - -	oz. iii.
Aqua, - - - - - - -	oz. i.

Sig: Teaspoonful three times a day. The frequency of the attacks was immediately reduced ; great precaution was taken to prevent severe bromization, my aim being to keep the boy thoroughly under the influence of the bromides without causing unpleasant effects on the stomach, or producing an eruption. This treatment was continued for nearly two years, the boy sometimes going a month or two months without a spasm. During this time, the closest attention was paid to his diet. All sweets were denied him, and nitrogenous food was given very sparingly, and always in the form of broths.

He had been free from convulsions for nearly a month, when one morning, he was taken with spasm after spasm; I thought it due to something he had eaten, and administered an emetic, but the convulsions continued almost unceasingly that day and night. Notwithstanding, he was given very large doses of the potassium bromide and chloral hydrate. The next day, in consultation with Dr. Wood, of Faribault, we gave him about seventy-five grains of potassium bromide, repeating the dose two hours latter with no effect. We finally decided to administer a hypodermic of morphia. This produced sleep

and obtained control of the spasms. I have continued the bromides from that time until the present, and as it is now more than two years since the occurrence of the last spasm, I think I can safely pronounce the boy cured. All paralysis has disappeared. His sense of taste is as keen as that of any one: indeed, he is more than ordinarily dainty in regard to his food. Speech is also fully restored. It is, of course, comparatively rarely that a physician is rewarded by such a result, but the possibility of attaining it is worth all the discouragement which is so often experienced by him who makes the treatment of this disease a specialty.

GEORGE H. KNIGHT.

A CASE OF TRAUMATIC CEREBRO-SPINAL MENINGITIS.

C. H. BOARDMAN, M.D.

A. B., aged 45, the subject of antero-posterior spinal curvature, fell last winter from one platform to another, the distance between the two being eighteen inches. He was somewhat stunned, but soon rose, and for two days continued to transact business, but at the end of that time was compelled by severe pain in his back to seek his bed. For a month he was attended by a physican not of our school, and obtained no relief from the insomnia which tormented him; the spinal pain, however, at first almost unendurable, became gradually less pronounced. At this point a change of physicians was made, and I saw the patient for the first time in consultation.

I found a man of slight frame and of delicate features and appearance. His countenance was haggard, and his

expression worn and anxious. He was nervous and restless, but complained only of inability to sleep. As to symptoms, there was almost a total negation; the special senses were intact, the pupils normal, and no interference was discoverable either with motion or sensation, nor were the functions of the bowels or bladder impaired. The familiar sense of constriction about the waist was wanting, but in its place a feeling of weight at the umbilicus, which, however, seemed to cause little or no distress, nor was reference made to it unless questions were asked. This sense of weight, with a pulse of 125 and a temperature of 103°, were all that betokened mischief. It is interesting to note here, while reporting these negatives, the utter failure to discover tenderness by firm pressure upon the spinal processes; a fact confirmatory of the opinion expressed by Wilks, Gowers, and Page, as to the slight value of any information to be obtained by this procedure when the vertebræ are not diseased.

There were certain indistinct statements as to the existence of tingling in the hands and feet for a few days after the accident, but at my first visit the insomnia and the memory of the spinal pain overshadowed all else, and, together with the nervous, fidgetty condition of the patient, made an accurate retrospect a matter of doubt as well as of difficulty. I should say that the mental faculties were unaffected. Hypnotics and sedatives were prescribed, and apparently with advantage. Upon making a second visit, a few days later, the restlessness was markedly allayed, a reasonable amount of sleep had been enjoyed, and the patient seemed encouraged and satisfied, and expressed his sense of improvement. The temperature and pulse rate, however, remained as at the former visit, and were made the occasion of a more careful inquiry as to their probable cause. An occasional cough now directed attention to the chest, and it was learned for the first time that hœmoptysis had occurred. Examination revealed

dullness over the upper third of the left lung, with moist rales; and the opinion was quite confidently expressed both that here was the source of the pyrexia, and that the pulmonary complication, rather than the original injury, would before long prove fatal. This visit was made on Monday; on the following Friday I received a telegraphic summons to which I was unable to respond; and on Sunday I found the patient comatose, with Cheyne-Stokes respiration, and moribund; he died that evening.

I learned that two or three days after my previous visit there was a somewhat abrupt diminution of the frequency and severity of the cough and of the amount of expectoration; at the same time a tendency to drowsiness became manifest, and with it a mild delirium. The drowsiness gradually deepened into coma, with involuntary discharges, and so, without convulsions, the end came.

The autopsy revealed caseous deposits in the left lung, with commencing softening, and inflammation of the membranes of the cervical and upper dorsal cord, extending upwards into the cranial cavity and involving the base of the encephalon. I was not informed of the existence of myelitis,* nor, during the progress of the case, was there any evidence of such a lesion. Neither the basal ganglia nor the cortex of the convexity were affected.

The case seems worthy of report, both because of its intrinsic interest, and because of its bearing upon questions whose determination is frequently left to the arbitration of a jury.

We should not expect to find in traumatic meningitis so entire an absence of symptoms such as are usually regarded as pathognomonic of that lesion, and the pulmonary affection affords ample opportunity for speculation as to its genesis and true nature: was it an expression of the diathesis of which the lordosis had been an outcome, and

*I was not present at the autopsy.

finding in the recent injury an adequate exciting cause; was it due to interference with nutritive processes as a result of the affection of the cerebro-spinal axis; or was it wholly independent of these agencies and occurring merely as a coincidence. In the absence of unattainable information, we cannot, of course, do more than hazard an opinion : I am inclined to think it was diathetic in its nature, and due, as a secondary result, to the injury.

Viewed from the domain of medical jurisprudence, the history is fruitful of suggestions, which might well be made the text of an essay upon the so-called "railway-spine": a phenomenon, be it said, which, unless attended by something more tangible than the familiar subjective symptoms, should always beget a suspicion that possibly a verdict for damages may prove more effectual as a remedy than our most approved therapeutic resources. In a given case of damage to a cord, alleged to be the result of fall, or blow, or concussion, I regard the lapse of time between the injury and the appearance of symptoms as a most material element in the etiology of the case. I do not believe that a simple shake (concussion), without some organic lesion, can inflict such injury upon the cord as Erichsen has taught, and as we seem to have come to believe may and does result from the application of this particular form of force alone. In some cases (as in that cited,) the sequence of injury and symptoms is such as to admit of no doubt with regard to causation. In these, there is, doubtless, hœmorrhage into or upon the cord, or a violent wrench, or even a more or less complete displacement of vertebræ, to either of which, as the *causa causans*, and not to the concussion or blow, the result must be attributed.

When, months after the receipt of an injury, the patient in the interim having been in fair health, so-called spinal symptoms make their appearance, and especially if these be wholly subjective, it is well to express a very guarded

opinion as to liability; for even if it can be ascertained that the symptoms in question are genuine and in no degree the fruit of the imagination, we should be able to exclude syphilis, and degenerative changes of various kinds from the catagory of possible causes before we make oath that the injury alone is, without a reasonable doubt, the source of the mischief.

REPORT OF A. T. CONLEY, M. D.

TALBOT JONES, M. D., Chairman Committee Nervous Diseases:

Dear Doctor: In accordance with your suggestion and the freedom granted in your circular, I have concluded to give you a condensed history of what have been to me, two very interesting and peculiar cases, of what I will call abnormal sexual development in young children, accompanied with peculiar phenomena. One reason these cases have been of so much interest to me is, because I have been unable to get any light on the subject from any medical work which I happen to have at hand. Neither could my medical neighbors help me, as they had not seen anything of the kind in their practice. Both cases were little girls, and in both the trouble was first noticed at about the 15th month of age, though one case developed nearly two years before the other; there was about that difference in their ages. The families of these children were in no way related, yet the children were in every respect much alike, both small for their ages, light complexion, blue eyes, regular features, nice looking children, though very nervous and irritable. These families lived so near me that I saw the children daily from the first, and the cases were so much alike that

to describe one is to describe both, and the phenomena I will now describe I noticed from time to time. My attention was called to the child lying on her belly on the floor, with the genital parts firmly pressed down against the floor, squirming and wiggling. The face at first flushed, grew in a moment deeply red. In time the eyes became red and bloodshot. The sweat stood in beads on her face. The breathing short and loud accompanied with short grunting sounds. The child seemed totally oblivious to its surroundings, and paid no attention when spoken to in an ordinary tone, seemingly wholly absorbed in this strange act. When interrupted she showed great irritation, and unless forcibly restrained or her attention diverted, would slip from her mother's lap and begin the act again.

As the child grew older she would often lean over a chair or against the sofa, or against any hard substance and perform the act. Sometimes for days and weeks she had to be watched constantly to prevent her indulging in the habit. Then again for weeks she seemed but little inclined to resort to the act.

During the times when she was the worst she was so irritable it was a great task to take care of her, and here I noticed a difference in the two cases. In the one case the irritability began a few days before the marked sexual trouble, so that the child's mother said she could always tell when the little one was going to have one of her "bad spells," as she called it. In the other case the irritability only accompanied the bad spells.

Only one other difference do I remember to have seen in the two cases, one child when prevented from pressing against any hard substance, would double up her little fists and press them firmly against the genitals, she all the time standing on her feet, the body in a stooping position, when she would go on with the act the same as before.

As these babies grew older they would seclude themselves to practice the act unobserved, not from any sense of shame, but that they might not be interrupted. One of them once in warm weather slipped away out of doors and was not missed for perhaps an hour. When found she was lying face down over a log of wood in a deep sleep, her face deeply flushed, eyes bloodshot and a little blood oozing from her mouth; when aroused she was irritable and cross, crying for an hour or two. The appearance was that she had continued the act until completely exhausted and fallen asleep, or perhaps the orgasm had ended in a fit, as the blood flowing from the mouth would indicate, but this was the only instance in either case that ever looked to me at all like epilepsy. Of course both families were very much shocked and grieved over the condition of their children, and both expressed the desire to see them in their graves rather than grow up to womanhood with this disgusting habit fastened upon them.

Having seen some similar cases described by Prof. J. Nevins Hyde of Rush Med. College in the Chicago Medical Journal and Examiner, I wrote to the Professor to know how the cases he had reported terminated, and what he thought the probable cause, his treatment, etc.

The Professor promptly answered that he had lost sight of the cases, but that they were much improved when last seen. He farther stated that he had been laughed at by Eastern physicians for advancing the theory of sexual orgasm in the cases of the children he had reported. That the best men in the East now claimed it to be "Petit Mal." This is as I remember the Professor's answer. I have not his letter at hand for reference. The treatment he advised, sodium bromide and camphor. I will say in passing that I tried these remedies with very good results. Before I had used potass. brom. with fl. ext. gelsemium, with fair results. One of these children died at 3½ years

of age with diphtheria, considerably improved as to the sexual disorder.

The other is living and is nearly four years old, and has had not more than half a dozen bad spells in the last year, and these bad spells are not nearly so severe as formerly.

As stated before I have watched these cases with interest from the first, and I fail to see where the Petit Mal comes in, unless these Eastern men call all sexual orgasm Petit Mal. I examined one of these cases closely and found the clitoris very sensitive and abnormally developed, and when in the midst of the act erect. I often found it and the parts about it so sore from so much friction as to need treatment. While I am inclined to think there was not completed sexual orgasm, for the child would continue the act until interrupted, and repeat it many times a day, yet that there was the true sexual exaltation or orgasm in a somewhat limited degree I truly believe. In fact it seems self evident.

In conclusion I can only say I am satisfied what the trouble with these cases was, but what the cause was I cannot determine. The parents in one case have had three children, the one afflicted being the second in order of birth; the other two have shown no symptoms of like trouble, in fact have been healthy always. The other family have but the one child. I am confident there is no syphilitic taint in either family. To all appearance all four of the parents are healthy, vigorous men and women, and there is absolutely nothing definite to my mind that points to any hereditary cause. Both families are in good circumstances, and both of the children had the best of hygienic surrroundings.

Yours truly,

A. T. CONLEY, M. D.

Cannon Falls, Minn., May 14th, 1883.

NO. 8 WASHINGTON AVE. S.,
MINNEAPOLIS, May 18th, 1883.

TALBOT JONES, M.D., Chairman Committee on Diseases of the Nervous System:

Dear Doctor: In response to your circular letter of 3d inst., I think of no derangement of the nervous system which has been of more curious interest to me than some cases of chorea which came under my observation and treatment; and while I have nothing to offer on the subject which is *new*, still my experience with that disease has been very interesting to me, and I may premise by recording that during a pretty extensive general practice through a period of over twenty-two years, and extending over an area of more than ten degrees of latitude and about same extent of longitude, I have found presenting themselves for treatment about the same number of cases each year, and in each climate, averaging probably three or four cases per year in some of its protean aspects.

Have seen the affection develop in all ages of life, from infancy to extreme old age. Notably, an attack of well-marked chorea developed (for the first time, according to his intelligent and candid statement) in an old gentleman aged eighty-four years. Nevertheless, while I have seen it develop in both extremes of life, am reminded that by far the greater number of cases have been in girls from five to fourteen years, thereby identifying it as a disease of childhood. There seems to be little reason for doubt that we meet with cases of this affection resulting from various and very dissimilar exciting and proximate causes, and, as might be expected, therefore, our treatment will be more or less efficient according to the true nature of the individual attack. That quite a number of attacks are purely of a *functional* nature and not at all dependent on any organic lesion is undoubtedly true; and this is the

class of cases where we would reasonably expect satisfactory result from our treatment. Nevertheless, I have seen two cases at least which were undoubtedly of a purely functional nature, and which resisted effectually for a long time all medicinal and hygienic treatment, and yielding at last to influences of pregnancy and lactation.

Dr. Barnes has collected and published a report of near fifty cases showing the influence of pregnancy and lactation on this affection, but I have not been able to secure his report.

This appears to be one of the affections where all treatment is experimental and generally ineffectual. That we do occasionally obtain marked good results from a certain line of treatment I can not doubt; but that the paroxysms will more frequently resist all remedial means is to be expected.

It seems that one of the strongest presumptive evidences of the purely functional nature of some attacks of chorea is to be found in the repeated cyclic course assumed by the paroxysms. And this feature was well marked in both of two bad cases which I now propose to report in this paper.

Case No. 1 was a rather plethoric young woman, aged eighteen years, and in apparent good health previous to attack, which came on suddenly and violently in spring of 1879, the paroxysms continuing in a most violent form day and night for about three weeks, and resisted during that period most of the best established remedies in that disease, and finally yielded (as was supposed) to the administration of comp. tinct. of serpent., prescribed by an "eclectic doctor," but as was evinced afterwards it only let up in its cyclic course to come again after a few weeks, and thus continued to run its round and then let up again, and so on until after some months her menstruation ceased and she became much worse for a while, when it became apparent that she was pregnant. The

paroxysms, however, grew lighter after a few months, and about the seventh month of gestation ceased entirely. She was confined at full time of a girl, which she nursed for about fifteen months, since which time she has had no declared symptoms of the disease. The child is healthy and has manifested no unusual nervous symptoms as yet.

Case No. 2 was so similar in its history, course and termination as to render anything like a detailed report of it superfluous. Beginning in an anæmic girl at puberty (fifteen years) and continuing to run a cyclic course in spite of all treatment, until at about age of eighteen she married and became pregnant; got much worse for a few months, then began to get better; was confined at full time of a healthy girl child, which she nursed about fifteen months, and appeared entirely well during that time. About the time of weaning the child, however, declared symptoms of a renewal of the ailment developed, and have only partially yielded (as I understand) to a change from Southern Minnesota to the sea side (New Jersey).

These cases were probably caused by some reflex functional nervous derangement. They were both violent at times in the involuntary jerking (clonic spasmodic muscular actions). Both seemed little amenable to treatment of any sort; both seemed free from any organic disease; and both yielded to the influences of pregnancy and lactation.

May remark further on this affection: Have seen a few cases yield (apparently) to the effects of cimi-cifuga, but such results have only been obtained in those cases which were evidently of a rheumatic complication, and those are the only cases in which medical treatment of any sort seems to avail anything.

Very truly yours,

C. G. SLAGLE.

RED WING, Minn., May 9, 1883.

DR. TALBOT JONES, Chairman Committee on Diseases of the Nervous System.

Dear Doctor: The cases whose most marked symptoms were those of the nervous system, most interesting to me during the past year have been as follows:

I.—Business men of sedentary habits, not addicted to excess in anything except the use of tobacco and devotion to work.

II.—The same class not using tobacco at all, but quinine, occasional chloral, and simple bitters.

III.—Both species exhibit the same symptoms.

Initiatory.—Restlessness, irritability ("cross as a bear," expresses it), often sleeping soundly a heavy lethargic sleep, tired in morning, but hurrying to work impressed with the idea that *their share* undone *all* will break, and so loath to let go, though recognizing fully the necessity for it. Constipation common. Urine often scanty, loaded with flocculent sediment, and high colored.

Secondary.—Irritability greater; patients says, "because there is so much to do and so little time to do it in." So he works harder, but knows that he really accomplishes less. Then is worried for himself and for business too; often is depressed and moody; talks in deep sleep, and then finds it hard to get to sleep. Now the pulse runs up to 120 perhaps, skin is cool and moist, but tongue fairly clean, and digestion peculiar in nothing but its daintiness. Cannot concentrate attention for any, or even important business. Figures are mixed, plans are not clear and connected. He tries, perhaps, a mild stimulant or tonic, and their comes for help.

I have yet to find serious kidney trouble in any case of this kind. The exact pathology I don't know, but of six marked cases within two years, five have rapidly recov-

ered on regular salt baths, regular diet, careful exercise, change of pursuit, not stoppage of work, and as medicine a minute dose of phosphorus. Where tobacco was in use, it was stopped or rigorously limited.

Almost parallel symptoms are more and more frequently developed in laboring women, over-burdened housekeepers, or "overbearing" mothers (if I may use the expression.) Repeatedly, same treatment has succeeded, but not so surely or quickly, because such women cannot easily change work or let it go.

The upshot of the matter, of which these cases are illustrations, is that much of the effects of overwork, even when exhibited in marked nervous symptoms can be promptly and (apparently) entirely removed, by a treatment which is but slightly aided by drugs. The serious part of the matter, to my mind, is that these marked cases are striking examples of injuries to nervous power which in less marked exhibitions, are so general as to demand the attention of physician and patients alike to the necessity for prevention rather than cure, and that a wide field of usefulness is open to those physicians who by tongue and pen will endeavor to bring their clients to a "realizing sense," of the relation of this injury of nervous power, to their many other ailments, little suspected of association with it. This done, that they be further made to understand that relief, by change of work or rest from all work, and attention to the restoration and preservation of bodily health, by the use of the simple means at their disposal. Exercise in the open and sun-lighted air, baths, friction, regular food, regular sleep, and hearty enjoyment of all of them, are the very best means we can suggest, and that they will prevent most of the "dreaded effects of our civilization," of which we hear so much, and the very fear of which has done much to cause mental distress and anxiety to this very class.

C. N. HEWITT.

Report of Committee on Epidemics, Hygiene, Etc.

J. C. ROSSER, CHAIRMAN.

Mr. President, Ladies and Gentlemen of the Minnesota State Medical Society:

There is an idea regarding the nature of epidemic contagious diseases which modern investigators have sought, and are still seeking to raise into clearness: the idea, namely, of origin and growth.

These affections are not things of yesterday, nor do we imagine that the slightest controversial tinge is imported into this report when we say that they are not of 6,000 years ago. But, however obscure their origin may be, they are not to be denied; and in order to obtain a full expression on this subject we forwarded our circular to 150 members of this Society, in compliance with the good old legend which admonished us to "Cast our bread on the waters," and lo! it has returned; and we bring it before you.

RED WING, Minn., April 6th, 1883.

DR. J. C. ROSSER, Chairman Committee on Epidemics, Hygiene, etc., State Medical Society:

Dear Doctor: Your circular and letter enclosing same just at hand. In reply you expect me to give you such suggestions as grow out of my long official service in State medicine. I will not therefore discuss the "germ" or any other "theory" of disease cause; but will give you a few of the facts as to the extent of the preventable disease mortality in our State.

One of the two most disgraceful records is that of diphtheria. It began to figure as a death cause in 1872, and the annual record of deaths since is as follows:

1872,	42
1873,	236
1875,	226
1876,	379
1877,	370
1878,	658
1879,	951
1881,	1397

12.12 per cent. of total deaths—double that of any death cause except consumption, which was 10.34 per cent. of total. Over 54 per cent. of deaths from diphtheria were under five years of age; over 92 under fifteen. Over 62 per cent of deaths from diphtheria were of foreign parentage.

The State Board of Health have for the last eight years earnestly striven to persuade medical men to unite with the Board in impressing upon the people that this disease is *very infectious*, and that it can be best controlled by strict seclusion of the sick and careful disinfection.

We succeeded, with the aid of a few earnest local health officers, in securing the endorsement of the State Medical Society at the Albert Lea meeting three years ago, and the popular opinion is constantly growing in this direction.

The profession are very negligent in their duty, and careless exposure and public funerals are still the rule. I beg your committee to report in the strongest terms on this subject and urge medical men to earnest and united action. Seclusion of the sick, prompt notification of the disease, and very careful disinfection offer the best protection we can at present have against this veritable plague.

Under the new sanitary code the power of local boards of health and of health officers is abundant and they and

the physicians who will help them may rely upon the prompt and constant co-operation of the State Board of Health.

The next record to which I wish to call earnest attention is the following:

In 1881, 1,273 children died of still birth, premature birth and infantile debility, which fact means that 4.4 per cent. of all born are born prematurely or die soon after birth.

Over 11.00 per cent. of all deaths in Minnesota are of this class.

In Massachusetts in five years, 5.53 per cent. of total deaths are of this class, just half our rate.

Now take typhoid fever, to which your circular specially refers. The record by years is as follows :

1872, - - - - -	315
1873, - - - -	326
1875, - - - - -	216
1876, - - - -	250
1877, - - - - -	255
1878, - - - -	169
1879, - - - - -	297
1881, - - - -	711

In 1881, therefore, this disease caused 617 per cent. of total death, of whom more than 51 per cent were between the ages of 15 and 30 years; more than 61 per cent. were between the ages of 15 and 50, and only 24 per cent. under 15 years of age. More than 64 per cent. had both parents foreign, and more than 25 per cent. had both parents American.

Compared with the other records—they kill the children; this takes its victims from the "self-supporting class."

There is more of this class of facts behind, but this exhibit is enough for my present purpose. Remember that these causes of death are of the preventable class: that

they can be reduced far below their present position on the list of death causes, by means already known and whose use is provided for, in the knowledge and power of physicians, Boards of Healths and intelligent parents, and what excuse have we to offer for the neglect to use and enforce the use of those means by every instrumentality in our power?*

As to the first classes causing death in infancy and early childhood, I wish to call the attention of medical men to the demonstration which these and other statistics give.

1st, of a very powerful evil influence to be found in ante-natal conditions.

2d, (and next in importance probably) causes to be found in the care of mother and child during the first weeks after confinement.

3d, that the most important, because most effective, death causes are to be found in the conditions of the house, which is the home, and in the modes of life and work and worry of the mother, mental and physical, during pregnancy and in child bed.

There is no necessity for the "refined methods" of modern scientific research, but rather for a clear, calm study of easily discovered facts, most of which are at hand, others to be gotten by careful inquiry and scientific sifting of so-called facts. The microscope and the physical and chemical laboratory are of use, and often essential, but they come in long after practical and immediately available means of staying the slaughter have been discovered, or demonstrated anew, for that is a very common result of such investigation, thanks to faithful work done before.

A perfectly practicable plan would be the study of limited areas of territory by several physicians working in concert. Let one study drainage, ventilation and food supply. Anothsr, the influences bearing upon the mental and physical condition of the mother during and after pregnancy.

Another, the facts of still birth, premature birth and early infantile debility.

Another, the meteorogical conditions and their relations.

At such intervals of time as may be agreed on come together, compare notes and discuss progress made, and the literature of the subject.

I can suggest no field of practical work which offers a richer reward to the faithful worker than this, both in reputation and good works.

Resolutions and committees as usually made up rarely effect anything. The work needs zeal, intelligence, knowledge of what has heretofore been done, and a careful and persistent search for proximate causes first. The remedy of the disease must be the outgrowth of such work, its prevention can begin very early in the search.

Take for instance typhoid fever; do I exaggerate when I claim that the single sanitary act of disinfecting the intestinal discharges of its victims would reduce the number of its victims sixty per cent. I am sure I do not; and see what an easy and simple thing that act is?

As to qualifications of local health officers we need:

1st. Thoroughly educated men, physicians, who have had at least three years active practice, and who will make a special study of hygiene as related to public use.

2. That they be the executive officers of local boards of health. Their compensation can now be regulated by the board appointing them and their duties are clearly defined in the law.

3rd. That they clearly understand that their work is largely missionary, and that upon themselves depends to a great extent the character which their work shall have, and upon its judicious selection and execution will depend the support to be given to it by physicians and by the people.

Yours,

CHARLES N. HEWITT.

HOWARD LAKE, Minn., April 12, 1883.

J. C. ROSSER, M.D., Chairman Committee on Epidemics, Hygiene, etc.:

Dear Sir: In answer to your first question I would say, no; second, no; third, yes. I think we have measures, if they could only be enforced. I do not accept any parasitic theory of the origin of typhoid fever. Look upon it as being a purely filth disease, contagious under certain circumstances. If everything in cities, towns, villages and country was kept scrupulously *clean*, such as cellars, privies, privy vaults, cesspools, sewers, wells, cisterns, barns, barn yards, and everything in and around the premises, avoiding crowded assemblies in unventilated rooms, having plenty of fresh air and sunlight, school houses and other public buildings properly ventilated, and a thorough system of quarantine against and entire isolation of imported cases—if the above rules were strictly carried out to the very letter, it is my opinion that we never would have a case of typhoid fever originate in Minnesota. And the first step will be to teach people how to keep clean, etc., and second to make them keep clean.

4th. An epidemic of diphtheria terminated about Oct. 1st, '82, which broke out here in July. 1881. First case occurred in a boy aged seven, who was attending a primary school. He was intimately associated with four other boys about the same age, three of whom died with the disease. A majority of the public did not believe in the contagiousness of the disease, consequently no precautions were taken to prevent its spread, except no public funerals were allowed. Epidemic continued until about Jan. 1st, '82, when public opinion began to be aroused, and then there was an abatement of the disease until about June 5th, '82, when it broke out again and contin-

ued until about Oct. 1st, '82. During the last outbreak more precautions were taken, patients were isolated as much as possible, and finally the last three cases (in September, '82) were quarantined, two of them dying. The funeral was strictly private, and after funeral house was very thoroughly fumigated, clothing, bed clothing, etc., was either burned or scalded and thoroughly disinfected with acid carb. and ferri sulph. sprinkled about the premises.

Since Oct. 1st we have not had a case of diphtheria in our village (over 1,600 inhabitants).

I believe that an epidemic of diphtheria can be stamped out entirely if the proper measures are adopted in the beginning, and every sporadic case should be treated as though an epidemic was right upon us, as I believe one case let alone will breed an epidemic.

We have but very little typhoid fever. A very large majority of the cases are in persons (girls) who have contracted the disease at Minneapolis or St. Paul, and have come home to be treated. They are usually isolated, and other members of the family do not contract it. If they fail to isolate and disinfect the discharges, all the members of the family generally come down with it.

5th. They should be selected from the very best material that could be had.

The above report I have had to make hastily; it is not even satisfactory to myself; but if it only encourages the Committee in the least I will be amply repaid.

Respectfully submitted,

E. Y. CHILTON.

DR. J. C. ROSSER, Chairman Committee on Epidemics, Hygiene, etc.:

Dear Doctor: Without entering into the discussion of the germ theory at all, I shall answer your first question, that I do not believe the germ theory sufficient to explain all the phenomena in the so-called zymotic diseases; neither is there evidence enough produced, to my mind, to prove the existence of a specific bacterium for each of the infectious diseases; neither do I believe bacteria or any of the other little bugs to be the cause of disease, but rather the result of the same—that is, diseases of a certain kind are favorable for the development of bacteria.

I do not believe that any known hygienic measures properly enforced would insure us altogether against typhoid fever; but that the laws of hygiene properly enforced would greatly lessen typhoid fever I have not a doubt. But until we know vastly more about the specific cause of typhoid fever than we now know we cannot hope to expel it from our borders.

We had quite an epidemic of typho-malarial fever along the Cannon River Valley last fall, mostly in railroad camps. These camps were tents or board shanties. There were perhaps forty cases all together, with but two deaths; so it was a mild form, and caused, as I think, by exposure and malaria (whatever that may be) and the season of the year. In one camp, which seemed to suffer most, water was used from a so-called mineral spring. It seemed probable from the surroundings that human excrement may have been washed into this spring, as rain was very common. If so, the germs of the disease may have entered the system in that way—that is, if there is a germ. About twenty of these cases were collected as soon as they came down and brought to town and taken care of at a private hospital opened for the purpose. The hygienic

measures enforced here were cleanliness, fresh air, wholesome food—notably fresh milk—and quinine.

In regard to the qualifications of a health officer: He should be a physician, usually, though not necessarily so; but whoever he is, he must have the respect and confidence of the people. In the next place, he should believe that epidemics can be prevented; if not entirely so, at least that we have the means to control them, kept from spreading, by quarantine and a due observance of the laws of health. He should be a man of energy, ready to go ahead and tell the people what to do, and not wait for them to push him into activity. In short, the local health officer should be a man of common sense whose opinions and orders will be respected, and who has energy and force of character.

Very truly yours,

A. T. CONLEY.

CANNON FALLS, Goodhue Co., Minn., May 15th, 1883.

BRAINERD, Minn., June 18, 1883.

DR. J. C. ROSSER, Chairman Committee on Epidemics, Hygiene, Etc.

Dear Doctor: In reply to the queries contained in your communication of March 15th, I have the honor to submit the following brief report:

That the "germ theory" best serves to explain the phenomena connected with zymotic diseases may be taken for granted, and its failure to do so in any one instance may be attributed to our imperfect knowledge of its details. Although I have found various forms of vibrios and bacteria in the secretions of those affected with zymotic diseases, I have never been able to detect a specific form as invariably associated with any particular affection, with the doubtful exception of the syphilis germ. This form,

obtained from the blood of syphilitic persons by cultivation, I at one time believed to be peculiar to syphilis, but I have since obtained similar forms by cultivating the blood of debilitated scrofulous patients.

Several distinguished observers have at different times announced the discovery of definite forms of disease germs for various contagious disorders, notably, a well-known professor of physiology has published a series of articles giving figures of a number of "specific disease germs," several of which have been recognized by mycologists as the spores and mycelium of well-known fungi, and investigation by competent authorities has in every instance failed to confirm the claims of the discoverers.

That the *materies morbi* of contagious diseases is a solid germ I have demonstrated by experiments detailed in a paper read before the Medical Society of the District of Columbia in 1876. Small pox and syphilitic virus were passed through vegetable parchment by osmosis, and the fluid thus deprived of all its solid particles was found to be completely inert.

Whether there is a specific germ for each and every zymotic disease, or whether some of the most minute forms of microscopic life, such as consist of little more than a point of unorganized protoplasm, may become the bearers of either the measles or small pox poison indifferently according to the conditions and circumstances in which they are placed, remains to be proven. If a white blood corpuscle may develop into an epithelial cell or a muscular fibre indifferently according to the point at which it leaves the capillary, it would seem that the latter hypothesis is at least tenable.

That the germ is the active agent in all fermentative and putrefactive changes seems to be generally admitted. A piece of meat placed in a germ free atmosphere, will not putrify. The demonstration of this fact is somewhat difficult on account of the number of precautions neces-

sary to exclude the germs always present in the air, but I have shown it successfully by extracting the heart of a frog in an atmosphere of burnt air and placing it under a bell glass where it remained seven days during the month of August, without showing any signs of putrefaction.

That any hygienic measures can ensure us entirely against typhoid fever, in the present state of our knowledge, is too much to expect, but proper sanitary regulation would no doubt greatly lessen the number of cases. The *materies morbi* of zymotic diseases may be conveniently divided into three classes—fiirst, those in which the germ is transferred directly from one person to another, as in small pox, measles, etc.; second, those in which the germ, after leaving a patient, undergoes a secondary stage of developement in a suitable *nidus* outside the body, as in typhoid fever; third, those in which the germ is developed entirely out of the body, as in malarial fever. It is evident that if we know what forms a suitable *nidus* for the growth and multiplication of germs of the second class, much may be done to prevent the spread of typhoid and kindred affections. It might be proper for your committee to issue a circular to physicians throughout the State impressing upon them the necessity of having the discharges from typhoid patient thoroughly disinfected at once, the most scrupulous cleanliness about the patieut observed, and the linen washed and disinfected as soon as removed, instead of being allowed to lie about in boxes and closets for an indefinite time. The danger of contamination of wells and cisterns from privy vaults and cesspools should be noticed, and instructions given to use no water from any well located within at least two hundred feet of a privy vault, as the loose sandy soil of a great part of the State will allow a well to drain over a much larger area. A series of experiments might be instituted with a view to determine the actual surface area drained by wells in different soils, as exact data in regard

to this matter seems to be wanting. Some time ago I added a quantity of potassium ferroyanide to the little water remaining in an old unused well and emptied several buckets full of a solution of sulphate of iron on the ground at a distance of seventy-five paces from the mouth of the well, and although I obtained only negative results, I believe that somewhat similar experiments properly carried out would yield valuable information. Such a circular might also contain brief instructions as to the principal hygienic measures that it is desirable to have carried out, for instance, the method of roughly estimating the quantity of organic matter in water by boiling with a solution of chloride of gold might be given—the microscope alone, however, in experienced hands will determine quality of drinking water, as it may contain a considerable quantity of organic matter and still be comparatively innocuous. As a general rule it may be stated that if only the larger animalcules, such as the diatomaceæ are found in a sample of water it is not poisonous, but if the smaller infusoriæ, such as vibrios and bacteria, are present, it is probably contaminated with sewerage or some other semi-putrid organic matter.

When it is practicable the principal officer of local boards of health should be a physician, having some knowledge of elementary hygiene, organic chemistry and the use of the microscope, so that the spectacle of herculean efforts on the part of a health officer to dispose of a comparatively harmless pile of horse manure while less conspicuous collections of the excreta of hogs and decaying nitrogenous substances are passed over unnoticed, would not be observed.

Very respectfully,

Your obedient servant,

J. E. CHENEY.

SAINT PAUL, April 10, 1883.

J. C. ROSSER, M.D.

My Dear Doctor: Your circular affords a tempting opportunity for the discussion of what has long interested me, i.e., the true nature of "Typhoid Fever as it exists in this State" (*vide* circular) As, however, the time at my command will not admit of such consideration of the subject as both its interest and importance merit, I must content myself with some suggestions merely, with the hope that others may be incited thereby to a more careful study, whose results shall be presented to the Society in a future volume of its Transactions.

First, however, let me reply briefly to certain of your queries.

I am not yet fully satisfied that the germ theory has passed the period of probation and made good its claims upon our suffrages. As a theory, it falls little short of satisfying the conditions of the problem, even if it does not completely solve it; but I am not sure that it is established as a fact, sturdy and incontestable.

There can be no question that certain diseases owe their origin to microbes, each variety being capable of giving rise to a certain disorder, and analogy as well as many ascertained facts, renders it probable that the etiology of various other maladies is to be sought for in the same field. The science of mycology, however, is still in its infancy; and until a truce is proclaimed between Koch, Pasteur, Spina, Formad, and a host of less renowned mycologists, it would be rash to descend from the traditional fence, and take part either for or against any of these weighty antagonists. For who shall say that we have reached the ultimate limit of possible microscopic research? It may be that some future Koch, peering into the, as yet, unseen, with a 1–75 or 1–100 objective, shall reveal to us that the bacillus has, after all, been the object of un-

merited obloquy and abuse; that he is not the real etiological factor in disease, but only an impostor and a pseudo-germ; and that the actual *corpus delicti* is to be sought in hitherto undiscovered organisms, of which he is the victim and the innocent carrier.

> "And these have smaller still to bite 'em,
> And so proceed, *ad infinitum*."

Suffice it to say, that the doctrine offers much that is not only plausible, but fascinating also; and not the least of its attractions are its definiteness and simplicity.

I have made no effort to determine whether every zymotic disease is dependent upon a distinct species of bacterium.

Your query, whether any known hygienic measure will protect us against typhoid fever as it exists in this State, introduces a subject to which I wish the attention of the profession might be directed. I refer to the real nature of the epidemic fever known among us commonly as typhoid; though in different parts of the Northwest it has a variety of synonyms. Is it a genuine "enteric fever," as we were once taught to call it; the "dothinenteria" of Trousseau, and the typhoid fever of Wunderlich and others?

Without entering in detail upon the symptomatology of either disease, let me call attention to certain salient points, which seem to afford strong evidence against their identity. First, as to the thermometric phenomena. In treating of typhoid fever, Aitken* says: "Where the evening temperature between the fourth and sixth days does not rise to 103° F., * * * * * we have in such cases certainly *not to do with typhoid* fever" (italics the author's); and again: "In the second week typhoid fever may be excluded with the greatest probability, if between the eighth and eleventh days the temperature is below 103°." Wun-

*Science and Practice of Medicine.

derlich* says: "The formula of this ascent is nearly as follows:

First day—morning, 98.6 ° F.; evening, 101.8 ° F.
Second day—morning, 100.21 ° F.; evening, 102.56 ° F.
Third day—morning, 101.66 ° F., evening, 103.64 ° F.
Fourth day—morning, 102.56 ° F.; evening, 104.54 ° F.

The initial stage of typhoid fever very closely approximates this type; very seldom does any other disease show a similar pyrogenic course, which is of itself a decisive test for a diagnosis."

Other witnesses might be summoned, but this is sufficient for our purpose. It will be admitted, I think, that in our endemic fever this methodical and orderly progress of temperature is not often encountered; there is a gradual increase until the summit is reached, as in all febrile disorders, but its course is fitful and irregular instead of exhibiting the character described by Wunderlich. And not only this, but it is not very uncommon to find the thermic maximum attained in the morning, instead of at the close of the day.

Indeed, the range of temperature in this disease affords little if any assistance in diagnosis, being wholly destitute of those specific characteristics which in certain other disorders point unmistakably to the nature of the case.

Again, in our endemic fever diarrhœa or even an approximation thereto is often absent; and in the majority of cases which I have seen there has been decided constipation, which sometimes demanded vigorous measures for its correction. This directs attention at once to the probable condition of the intestinal glandular system. Harley says: "Without positive evidence of inflammatory action in these (solitary and agminated) glands, the disease would not be enteric fever."

Unfortunately, we are unable to appeal to the results of autopsies for information upon this point: so far as I can

*Medical Thermometry.

learn, but few examinations have been made, and I have not succeeded in my efforts to ascertain what lesions were discovered. But the frequent absence both of diarrhœa and of iliac tenderness and gurgling would seem to militate against the belief that inflammation of the intestinal glands can be an essential feature of the disease.

The "rose spots" of typhoid fever are rarely discoverable in the disorder as it occurs here. If it be true, as is held by some whose large experience lends weight to their opinion, that the total absence of the *taches rouges* would be a serious if not a fatal flaw in the diagnosis of typhoid fever, we have here an additional reason for doubt as to the identity of the diseases under consideration. I am not yet prepared to accept what may be styled the *ex-post facto* method of diagnosis which has been suggested to me, i.e., "if the patients die, we can call it typhoid; if they recover, it was something else;" but it has long been a question with me whether we are dealing with the same disorder as that described in many treatises as typhoid fever, but modified, perhaps, by climatic and other influences, or whether we have a different disease; possibly a different species of the same family.

Upon the answer to this problem must depend, to some extent, the reply to your question. "Would any hygienic measure, properly enforced, insure us against typhoid fever as it existe in this State?"

If our fever be a true typhoid fever, then it is due to the introduction of a specific poison, whose habitat is the small intestine, and which gains admittance most commonly through the medium of drinking-water; in this case, the precautions, as obvious as they are familiar, must be enforced. But if we are treating a fever whose origin must be sought elsewhere than in the specific germs of enteric fever, it may be that different weapons are requisite, though furnished from the same armory, and

approved, not less than the others, by the divinity whose dictates are the supreme law in all sanitary science.

We must first obtain reliable information concerning the etiology and pathology of our endemic fever; that accomplished, we shall be able to recommend appropriate measures of defense; and if the results of a number of autopsies, with careful notes of cases, shall be reported at our meeting next year, as I trust may be the case, then more intelligent and reliable conclusions may be reached than seem at present to be attainable.

With kind regards,

Your friend,

C. H. BOARDMAN.

NOTE.—I do not wish, of course, to seem to deny the occurrence here of true typhoid or enteric fever; but only to call attention to certain peculiarities of our endemic fever, with a view to learning whether these denote a real or only an apparent differenee between the two disorders.

C. H. B.

CONCLUSION.

BRAINERD, Minn., June 12th, 1883.

When the word "zymosis" was introduced into medical literature the phenomena of fermentation was not understood. It was regarded as the phenomena of contact; the phenomena of movement communicated by an albuminoid substance which was undergoing change, or of phenomena produced by semi-organized substances which are being transformed into this or into that; no true conception regarding it was obtained. The thought of life without air had not dawned upon the minds of the iatro-

chemists when they postulated a "fermenta morbi" to which they attributed the power of producing disease by exciting a ferment in the humors. But long prior to these pure efforts of the understanding, thought, no doubt, had long hovered about this doctrine; and the checks which experience alone can furnish being absent, men found no difficulty in believing in cases of spontaneous generation. When the brewers at that time introduced ten pennyweights of yeast and collected from forty to fifty pennyweights during fermentation, thought could not be kept back from a result so profoundly suggestive; and they naturally concluded that this additional yeast had been spontaneously generated by the wort. Thus the theories of the physician resembled the theories of the brewer, inasmuch as they were both founded upon empirical observation—an observation of facts apart from the principles which explain them. Vital acts, instead of being traced to natural, were referred to moral causes; and their theories accordingly took an anthropomorphic form.

On examination of this motion of organic growth in the year of 1680, when the microscope was still in its infancy, Leuwenhoek turned the instrument upon yeast and found it composed of minute globules suspended in a liquid. Thus knowledge rested until 1835, when Cagniard de la Tour in France, and Schwann in Germany, independently, but animated by a common thought, turned microscopes of improved definition and heightened powers upon yeast and found it sprouting and budding forth into the general joy of opening life, demonstrating conclusively that the augmentation of the yeast alluded to above was the result of vitality; and it undoubtedly originated from the growth of a minute plant now called torula. "This discovery marks an epoch in the history of fermentation" and should have forever set at rest the question of spontaneous generation, and taught mankind that it is by the operation of an insoluble mystery that life is evolved;

that the torula of barley is as ancient and as valid as the barley; that the ferment of the grape is as ancient and as valid as the grape, and the like may justly be concluded from analogy of all other ferments, which are eternal, so much, at least, as life on the surface of the earth may be eternal.

Those who have occupied themselves with the beautiful experiments of M. Pasteur will remember how he illustrates the various phases of phenomena through which his "immense reservoir" of grapes passed in order to become gaseous and return to the atmosphere in the more or less universal forms of vapor, carbonic acid gas, hydrogen, nitrogen, ammonia, etc.

As a brief discussion of this experiment will enable us to see the bearings of an important question, we will bring it before you.

The first is the alcoholic ferment, which is produced by a small cellular plant, a parasite of the grape. This plant decomposes the sugar of the grape into carbonic acid gas, which it sets free, and an alcohol which remains in solution. When the sugar is all decomposed the function of this plant has ended and it dies and falls to the bottom of the reservoir.

But scarcely has this process ended, scarcely has the carbonic acid gas ceased to escape, when a pellicle forms on the surface of the liquid and in which a new life resides. Test this pellicle, and we find it composed of two mycodermic plants; but we will only consider one of them, which, strictly speaking, might be classed with the plant that has decomposed the sugar and which has now fallen inert to the bottom. Still, if our two little plants resemble one another anatomically, the are very different physiologically. The cells of the ferment which destroyed the sugar lived and multiplied without air; but the new cells cannot live without the aid of its oxygen; indeed, they fix oxygen upon the alcohol contained in the wine according

to the following equation: 46 parts by weight of alcohol unite with 32 parts of oxygen to form 60 parts of acetic acid and 18 parts of water. The combustion which results from this clash of atoms is such that the whole surface of the liquid to a certain depth is thrown into tremors and indicates several degrees of heat—higher than that of the deeper portions. Clouds rise above the cask, containing a few odorous products of some vapor of acetic acid. Gradually all these external phenomena diminish or cease entirely, and the mycodermic pellicle falls inert to join the preceding ferment, now at the bottom of the reservoir. Now, instead of a reservoir of wine we have a reservoir of vinegar. But nature exacts from every antecedent its equivalent consequent, and from consequent its equivalent antecedent; and the determination of the return of the organic matter to the atmosphere and to the soil has been very little furthered by the second phase of the phenomena just described. The alcohol, 100 parts, which contained more than 52 parts of carbon, more than 13 parts of hydrogen and nearly 35 parts of oxygen, all derived from the original sugar, has indeed disappeared and given place to acetic acid; but the matter has not become gaseous, it has not returned to the atmosphere as it partly did at the beginning. The newly formed acetic acid holds all the carbon of the alcohol. Notice what now takes place in our "immense reservoir of vinegar," at the bottom of which lie heaped together the stems, the pits, the pellicles; the cells, the parenchyma of the fruit and our two ferments, the wine yeast and the vinegar yeast.

The fact is very curious that the ferment of the vinegar which has just fallen to the bottom of the cask, exhausted by the immense chemical work which it has accomplished and seemingly rendered inert by the sharp combustion of which it has been the seat, reappears on the surface of our acid liquid in the form of a very thin pellicle; and again, the upper strata of the vinegar becomes heated and again

clouds rise above the liquid. These clouds are no longer composed solely of the vapor of water; the latter is still very abundant in them, but it is mingled with torrents of carbonic acid gas, and this remarkable phenomenon continues as long as any acetic acid remains in the liquid—in other words, after the vinegar ferments an ærobic ferment —one needing air—has burned the alcohol and turned it into water and acetic acid, it burns the latter and turns it into water and carbonic acid. "It also burns the original acid of the grape." During this the third phase of the phenomenon, the return to the atmosphere has gone on rapidly; all the carbon, all the hydrogen, all the oxygen of the original sugar, are now in suspension in the air in the gaseous state and ready to enter the cyrcle of life under the influence of solar heat and light. What now is the condition of our liquid mass? It is no longer acid, but neutral. It is only water holding in solution a very small quantity of mineral or organic substances; *and could we protect it from atmospheric germs it would forever remain neutral.* "But scarcely has this new liquid lost all acidity, when it becomes cloudy throughout, germs floating in the airhave brought a new life—not like those which have preceded it, but a life rendered possible by the neutral character of the new liquid." The surface becomes covered by a layer of fatty, mucilaginous material. Throughout the deeper portions of the whole mass a milky cloudiness appears, and infectious and very deleterious odors indicate, even at a distance, the putrefaction and the danger. Our reservoir is now in that condition to which zymotic diseases have been referred, as it now contains the ferments of putrefaction, vibrios and bacteria.

Take a single drop of this liquid, from the surface, and the smallest fragment of which, is found, on an examination to contain millions of bacteria. Examine a single drop taken from the deeper layers of the liquid, and we find the vibrios of putrefaction. Air is necessary to the

life of the bacteria consequently, they inhabit the surface. The vibrios do not need air, and are protected from it, by the overlaying bacteria, and while the vibrios transform a large part of the solid materials into the gaseous products of putrefaction, the bacteria fix oxygen upon the carbonic substances held in solution, and thus set free large quantities of carbonic acid-gas. The medium suitable for the support and nourishment of bacteria and vibrios soon becomes exhausted, and a change is announced, especially as regards the bacteria, by a steadily decreasing appropriation of the oxygen of the air. But the atmosphere continues to bring new germs, and here and there, on the surface of the fatty pellicle spots of different colored moulds appear. These moulds, like bacteria, require air—they are also aerobic beings; and find in bacteria an appropriate food. Like all ferments that require air, these moulds cause oxygen to combine with the subjacent substances and thus set free carbonic acid-gas. Thus the substances contained in our reservoir has continued to become gaseous and mineral, and much increased by the heat of combustion, evaporation by this time has removed most of the water, and the reservoir dries; and the saline substances which have not been able to take on the gaseous form remains as ashes—as much so, as if fire had swept over the whole matter and laid waste and destroyed all organic materials.

And now the mineral substances return to the earth, the organic matter has passed into the air; and the germs, the spores of vibrio and bacteria of the moulds, and the cysts of the infusoria, are borne away upon the wings of the wind, to recommence elsewhere their work of life and their work of death. From the anaerobic, to the aerobic ferment, Pasteur conducts his argument; and leads us to admit, that in germs reside alone, the perpetuity of the life of microscopic beings, observed everywhere in nature. It was while observing these differences of deportment,

as manifested by these two ferments; that the thought of life without air, flashed upon the mind of this admirable investigator. His beautiful experiments on the decomposition of vapors, and the formation of actinic clouds by light, led Prof. Tyndall to experiment on the floating matter of the air; and from the associated indications, he acutely inferred that the power of developing life by the air, and its power of scattering light, would be found to go hand in hand. An illustration of the minuteness and multitnde of the particles is given; and his experiments afford irresistible evidence that there is a direct relation between a mote laden atmosphere and bacterial development. The presence of the physically demonstrated motes is as essential to the production, in a sterilized infusion of septic organisms, as light is to actinic action.

The disclosures of modern microscopical investigations tend to establish, and learned scientists are to-day, prescribing for zymotic. bacillic and cryptogamic diseases—basing their therapeutics upon the notion that, reproductive parasitic life is at the root of epidemic contagious affections. Surgery has so far embraced the "germ theory" that, Dr. Henry O. Marcy informed us, at the last meeting of the United States Medical Association, that, "the surgery of the present is being rapidly rewritten." But in relation to medicine proper, the case is very different; and on every hand, we are greeted by a wail of protest from all along the lines of both rational and clinical medicine. Who are right and who are wrong is, we submit, a problem for reasonable and grave discussion. Without committing ourselves in the least to the notion now held by regular medicine; without offering any objections here, or expressing any adhesions to the germ theory, as entertained at present; we would simply draw attention to the fact, that in forming an opinion, the observed uniformity of nature should be our only guide.

Within the long range of physical inquiry, we have never discovered in inorganic matter a potency that was capable of a vital act, that was capable of reproduction. Here, however, we are upon the edge of a battle field which we do not wish to enter on this occasion; as our business is not with the possible but with the actual.

Thus far our way is clear, but now comes our difficulty. There are diseases which prevail as endemics, but are not contagious diseases; and the germ theory makes no effort to account for their origin in this manner. But there are other diseases which are prevalent as epidemic diseases, and which are contagious diseases, whose phenomena cannot be explained on any other principle than on the germ theory. When we examine the materials of which the earth's crust is composed, we find them to consist, for the most part, of substances whose atoms have already closed in chemical union—whose mutual attractions are satisfied, and closed long ago in chemical union, and are, therefore, dead; and it is out of this dead matter—dead as grains of sand—that the germ theory derives the possibility of any form of life to arise. We admit that you can build crystaline forms out of the play of molecular force. Under its influence we have all seen them grow before us like *sproutiug ferns;* exhibiting forms as wonderful as if they had been produced by the play of vitality itself; but we fail to imagine how, out of this mechanical act, and from these individually dead atoms, anything that is organic could arise. Disease, as we understand it, belongs to the two kingdoms of nature, the vegetable and the animal. Function is as necessary to disease as force is to motion.

The question then is, Does non-contagious endemic diseases belong, or depend upon an inorganic material for their origin? Is this material simply an inorganic poison, and may it be derived from any one of three kingdoms of nature? Follow them, and what do we find?

They are not self-multiplying. They are not contagious. They do not act as ferments, but as irritants, or poisons, as the non-metallic and metallic substances; or as neurotics, as morphine, strychnine, etc., do, when conveyed in certain quantities into the human system, and whatever their effect may be, it cannot be communicated from one individual to another. We will now with your permission adopt a similar line of argument. Should we show you in a ward of one of your hospitals two patients, one of whom was suffering from remittent fever, and the other from typhoid fever, and ask you to tell us which of these two patients was suffering from zymotic disease, and which was not; you may say that both are suffering from zymotic diseases. But we beg to say they are not, and appeal to the phenomena associated with the typhoid patient to prove that the other patient is not suffering from a zymotic disease. That the cause of the remittent is an inorganic cause; that its force is catalytic force; while the cause of typhoid fever is organic and is capable of indefinite self-multiplication, and bears as constant a relation to its contagium as a thistle does to its seed; and so, in all epidemic contagious affections, they bear as constant a relation to their causes as the microscopic organisms do to their germs. The bacterium remained a bacterium, the vibrio a vibrio, the penicillum a penicillum, and the torula a torula, throughout all of Pasteur's researches. Sow any of them in a state of purity in an appropriate liquid and you get it, and it only, in the subsequent crop. In like manner sow scarlatina, and your crop is scarlatina, typhoid virus, and your crop is typhoid, variola and your crop is variola, and so on throughout the whole class of epidemic contagious diseases. We have intimated that intermittent fever originates from an inorganic cause. You may say that we beg the question when we assume this to be the case, "because it is not a contagious disease;" that it may with much propriety be referred to a low vi-

tality. Here we should agree with you, deeming it indeed probable that a vitality had much to do in its manufacture; but like many articles in our *materia medica*, while they may have been evolved by cell action, they are still inorganic compounds, and act by contact, and this issue of their phenomena is not more incongruous than the flash of light from the union of oxygen and hydrogen. But you ask, If they manifest their phenomena simply by contact, where and what are they doing throughout that long period, called the "period of incubation?" Is, then, a "period of incubation" necessary in order to establish its nature as regards organic or inorganic? If so, on what principle do such inorganic substances as mercury, arsenic, quinine, and other drugs, when introduced into the system of healthy human subjects, *in small and repeated doses* require so much time to produce their toxic effects, requiring as much time as the cause of intermittent fever requires to produce that disease? And in case of the quinine especially, after its long and repeated employment, its action is followed by phenomena which resemble an intermittent fever very closely. With reference to intermittent and remittent fevers, Watson remarks, "In time out of mind, it had been matter of common observation that the inhabitants of wet and marshy situations were especially subject to these definite and unequivocal forms of disease," and we must add that ever since the surface of the earth assumed its present condition, or was fit to be the theatre of life, the same natural agencies which are now at work elaborating, evolving and disseminating what we call malaria, must have been equally in operation.

And if you ask us, from whence comes this malaria, and wish us to answer your question clearly and definitely and with that reverence which is the undeniable historic antecedent of our present enlightenment, which tacitly underlies our present therapeutical applications, was

thought to be based upon the broadest induction, and was regarded as verified by the most constant, regular and universal of deductive processes. The confession that we feel bound to make before you is that it is inorganic; that it is not capable, from its nature, of "exciting a ferment in the humors;" that it is the product of low forms of vegetable life, a natural process of these forms, which furnish materials for their own decomposition, as the grape furnishes the parasite of the grape, and barley torula, as set forth with much power and clearness by M. Pasteur in his endeavor to answer M. Bouilland:

Question—What are the ferments of the ferments?

The ferments that live without air are the ferments of disorganization; of decomposition—the pathological ferments; while the ferments which need air are the physiological ferments, the beings which intervene and burn the decomposed matter generated by the anærobic ferments. The ærobic ferments are the hygienic ferments.

The next phenomena to which we call attention are the phenomena associated with that disease known as typhoid fever; not that we know much about it, but because we have been taught that it has a "miasmatic origin;" that its contagium increases within the bodies and is contained within the dejections of those thus affected; and because it is classed in our text books among the acute infectious diseases.

You will please keep in mind this fact, that the particular experiences which furnish the warp and woof of our theories regarding medicine proper were drawn, not from the study of nature, but from what lay much closer to us, the observation of men. But out of the contemplation of nature and out of man's thought concerning her, there has in these later times arisen that conception of the constancy of nature to which we have referred and which at length has become the guiding conception of modern thought. And every intelligent physician guides his in-

vestigations and risks his remedies upon the belief that the order of nature is constant and the relation of cause to effect unchanged.

The phenomena associated with typhoid fever indicate that it is an infectious disease; that it will infect an individual by coming in contact with another during certain stages of the disease; that even the dejections of patients thus affected are infectious, and are thus capable, under favorable circumstances, of indefinite self-multiplication and reproduction. Therefore its cause is organic, it is vital, and we cannot form a mental picture of life apart from the organism through which it is supposed to act. Test yourselves honestly and see whether you possess any faculty that would enable you to form a different conception. If, then, this disease is the expression of an organized factor this agent must have a local habitation, and thus localized it must possess a form, and if so, what form? Should you challenge an appeal to the microscope or to the chemist's balance to decide the question? We should decline your challenge on the ground that the microscope, precious and perfect as it is, has no voice in the real question of germ structure; that it has no power to show us the real beginning of life. The microscope has done much towards teaching us how to reconcile the *claims* of many of the *low forms of life*. It has taught us that they are by no means useless in the economy of nature; that they exercise a useful and valuable function as the burners and consumers of dead matter, animal and vegetable, reducing such matter with a rapidity otherwise unattainable to innocent carbonic acid and water. Furthermore, the microscope has allowed us to individualize them and that certain classes are really dangerous to man. By the use of this instrument Pasteur was enabled to trace the diseases (which had over and again occurred among the French wines) to the life of low organisms, and by the simple expedient of heating the wine to a temperature of

50° centigrade he rendered it unalterable, and thus saved his country the loss of millions.

In 1850 two distinguished French observers, M.M. Davaine and Rayer, noticed in the blood of animals which had died of the virulent disease called splenic fever, small microscopic organisms resembling transparent rods, but neither of them at that time attached any significance to the observation.

In 1861 Pasteur published a memoir on the fermentation of butyric acid, wherein he described the organism which provoked it (all great things come slowly to the birth), and, after reading this memoir, it occurred to Davaine that splenic fever might be a case of fermentation set up within the animal body by the organisms which had been observed by Rayer and himself.

Now let us see what subsequent research has done with this conception. Some years in advance of the labors undertaken by Davaine, observations of the highest importance had been made on splenic fever by Pallender and Branell, and ten years ago Dr. Burdon-Sanderson gave us a very clear history of what was known up to that time of this disease. With regard to the permanence of the contagium, it had been proved to hang for years about localities where it had once prevailed, and this seemed to show that the rod-like organisms could not constitute the contagium, because their infective power was found to disappear in a few weeks.

But other facts, however, established an intimate relation between the organisms and the disease, which caused Dr. Sanderson to conclude that the contagium *existed* in two distinct forms: the one "fugitive," and visible as the transparent rods; and the other permanent but "latent," and not yet brought within the grasp of the microscope. At the time that Dr. Sanderson was writing this report, a young German physician named Koch, occupied with the duties of his profession in an obscure

country district, was already at work applying various original and ingenious devices to the investigation of splenic fever. He studied the habits of the rod-like organism, and found the aqueous humor of an ox's eye to be particularly suitable for their nutrition. With a drop of the aqueous humor he mixed the tiniest speck of a liquid containing the rods, placed it under the microscope, warmed it suitably, and observed the subsequent action. At first scarcely any change was noticeable: but within several hours time the rods began to lengthen. They grew rapidly, and soon stretched through several fields of the microscope, forming knots of such bewildering complexity that it was impossible for the eye to trace the individual filaments through the confusion. But his observations did not end here. He continued to watch the filaments, and after a time noticed little dots appearing within them. These dots continued to increase in number until the whole length of the organism became studded with minute ovoid bodies, like peas within their shell. The integument of the rods fell to pieces and its place was left occupied by long rows of spores. These observations were confirmed by the celebrated naturalist Cohn, of Breslau. The appearance of these germs or spores which seemed to develop within the rod-like organisms, led Koch to a solution of the existing perplexity regarding the latent and visible contagia of splenic fever, which had been referred to by Dr. Sanderson, and in the most conclusive manner Koch proved the germs, as distinguished from the rods, to contain the contagium of the fever in its most deadly and persistent form. These conclusions come to us with a presumption amounting to demonstration that virtually infective diseases have been discovered with which living organisms are as closely and indissolubly associated as the growth of torula is with the fermentation of beer.

Not on the basis of vague conjecture, but of positive knowledge, we would urge that reproductive parasitic

life, beginning and ending in a distinct genetic product is at the root of epidemic contagious diseases. That living organisms—living germs—finding lodgment in the body increase and multiply there, on the principle that the fluids of the body are the fermenting substance, and these germs are the ferment, as lactic acid is the fermenting substance, and the vibrios the ferment in the butyric acid ferment. The vibrios decompose, by weight, matter that is about two hundred times greater than itself, and who will set limit to the possible work of destruction induced by the life of germs during an epidemic? The idea has been advanced that these "low organisms may receive and transmit, but do not create infection;" but it really seems to us as if those who advance this notion were simply pushing back an unaltered question. If they mean that wounds are thus fertilized, as it were, by bacterium in the same manner as bees fertilize an orchid, which they do by rubbing against the viscid stigma of the flower, and thus against the pollen-masses, and thus spread the germs abroad—this explanation would certainly seem to us as the introduction of a greater difficulty to account for a lesser one. Such an image refuses to fall into place, so as to give definition without penumbral haze, while the germ theory intimates that bacteria may both create and transmit infection; and here the image is distinct—the creation and transmission of infection being closely figured as the same phase of the self-same mystery.

These questions define a hypothesis not without its difficulties, and those who hold the germ theory of disease are by no means ignorant of the uncertainty of their data; they are by no means ignorant that any human belief, however broad its basis, however defensible it may seem, is, after all, only a probable belief, and that our broadest generalizations are simply statements of the highest degree of probability; and they have simply determined the elements of their curve in a world of observation and

experiment, and prolong that curve into regions where certainty possessed by experimental inquiry is here shut out, and accept as probable that a germ, then an organism already microscopic, may provoke those phenomena which characterize contagious epidemic diseases.

While rapid progress has taken place in the eollateral sciences of medicine, while able investigators have been at work in the branches of anatomy, physiology, pathology, medical chemistry, surgery, obstetrics and hygiene, and by their endeavors have established for medicine a high rank in the field of modern science; but little real advancement has been made in the department of therapeutics. Let us, for a moment, consider our fever remedies. Many of you remember when it was taught, and believed that in digitalis we had a sure remedy. You remember Wunderlich's analysis of a large number of typhoid fever patients, in which the employment of this drug was followed by the most favorable results; and you may call to mind how his statements were confirmed by Forbes of England; and you also remember when Thomas, a follower of Wunderlich, proved to his own satisfaction, and to the satisfaction of the medical profession, that digitalis did not cause a reduction of temperature, but on the other hand exercised a most disastrous effect on the patient himself. Prof. C. H. Wood denies any antipyretic action to this remedy. Veratrin, quinine, alcohol and cold water were the next dominant agents that received attention as fever remedies. Veratrin had a short-lived reputation. Liebermeister's investigations and statements in relation to the febrifuge powers of quinine, led to the belief that the *true* antipyretic had at last been found. Other observers also confirmed his conclusions.

But Stille informs us that "it would be more satisfactory if these statements, experiments, and important conclusions had received the corroboration of that clinical experience which gives them their chief interest; but hither-

to we have found *no proof* that quinine can either shorten the duration or diminish the mortality of continued fevers." Its antipyretic action is exceedingly uncertain, and comes only as a result of toxic doses. The same remarks will apply with still greater force to alcohol. The history of the development, by Jurgensen and Liebermeister, of the cold water treatment of fevers, is familiar to all, and it certainly has not realized the hopes of its original defenders. Ringer says, admirable as this advance in the treatment of fevers undoubtedly is, yet unfortunately it has not proved quite as successful as was at first anticipated, several patients having died in spite of it. The medical profession for two thousand years has been dealing, not with the *cause*, but with the results of disease, and we are now in that condition to which Prof. C. H. Wood refers when he says: "Experience is said to be the mother of wisdom, but verily she has in medicine rather been a blind leader of the blind;" and the history of medical progress may be broadly described as the history of errors, "a history of men groping in the darkness, finding seeming germs of truth, one after another, only to be cast back into the vast heap of forgotten baubles that in their day had also been mistaken for something fixed." As a traveler without a compass in a fog may wander long imagining he is making way, and find himself, after hours of toil, at his starting-point—so medicine, having tied and untied the same knots, and formed or dissipated the same clouds, we find it at the end of centuries almost in its old position. The radical defects of all therapeutics based upon pathology are that they deal with the results of disease and not with its cause. Treatment, therefore, to be curative, must be directed to the origin of disease and not against its phenomena. Never, surely, did proscription plead so irresistible a claim, and the questions here raised are inevitable. They are approaching us with accelerated speed. For the want of this knowledge, as Dr.

John Harley says, "Expectancy and homœopathy, the twin progeny of ignorance and deception, have grown from a comparatively innocent childhood to most mischievous proportions." The seekers after medical knowledge, for the want of facts, have in a great measure forsaken the fountain of living waters, and given themselves up to the re-manipulation of the notions of their predecessors. Thought has become object, as when the acceptance of mere authority led, as it always does in science, to intellectual death. You who have escaped from these notions in the high and dry light of the understanding, may deride them, but in so doing you deride accidents of form merely, and fail to touch the immoveable basis, which is ignorance, as regards the origin of disease. An Archimedian fulcrum is here required, which the medical profession cannot command. There is no fusion possible between the germ theory and any other thing as regards the cause of disease: no motor energy in the intellect of man that would enable him to carry, without logical rupture, the one to the other. Fear not the germ theory. It is now in the hands of able and accomplished men; and the bribe of eternity itself, were it possible to offer it, could not prevent the professional mind from closing with the truth.

There is a disease which prevails as an epidemic among the white races throughout this State, while the Indians are free from its ravages. Doubtless all of you meet with it annually. It usually makes its appearance about the middle of the month of August, and under favorable circumstances extends far into winter. It has been characterized by certain pathological lesions, found especially among the glands of Peyer, and is known as typhoid fever. These complications are always present, to a greater or less extent, during the course of the disease.

Out of thirty-nine cases of this disease, the post-mortem appearances in thirteen only showed all the characteristic

complications. These thirteen patients died during the third and fourth weeks of their sickness from the effects of these complications Five of these thirteen had intestinal hemorrhages, and all showed besides the usual ulcerations of the glands of Peyer, lesions in the mesenteric and solitary glands, the stomach and the spleen; and one case showed enlargement of the bronchial glands, and laryngeal ulcerations. The "stadium eruptionis et florescientiæ" manifested itself in two of the thirteen cases during the second week, and all had diarrhœa from the beginning of the attack. The remaining twenty-six cases died during the second and beginning of the third weeks, and post-mortem examinations disclosed that the glands of Peyer, the solitary glands, the stomach, and other organs were in a state of *intense congestion*, and we have reason to believe that had these patients survived a week or ten days longer that the glands of Peyer and others would have also undergone molecular death. The majority of these patients suffered from constipation throughout their illness, and the temperature curves ran higher than it did in those patients who showed moderate diarrhœa, which doubtless must be regarded as an effort on the part of nature to relieve the intense congestion to which we referred.

That this disease is not dependent upon, but simply associated with, an inflamed or ulcerated condition of the follicles or glands of Peyer, there can be no question. The tendency of this disease is to produce venous congestion in certain organs. It causes the headache in the beginning by producing congestion of the superior longitudinal sinus about the foramen cæcum; and this is a very close analogy between the repeated epistaxis that occurs in the first stages of this affection, and the diarrhœa and subsequent intestinal hemorrhages. It also causes the bronchial catarrh and ultimately the laryngeal ulcer in the same manner and on the same principle as it causes the gastric

and intestinal catarrh, and ultimately intestinal ulcerations. That during the course of this disease the blood undergoes great and decided changes all must admit; that it becomes unfit for nutrition the non-healing of wounds would indicate; and thus during the course of a typical case of this disease the whole system becomes invalid, and the weakest parts give way first, and thus closes a long series of changes incident upon, as it has often been expressed, the organism and its environment. That this disease is infectious; that its tendency is to run a determinate course; that it belongs exclusively to man, who can only communicate it to his own species, all must confess; but as regards the physical, chemical or natural history of its cause the scientist himself cannot tell. But by the incessant dissolution of limit, as it were, we arrive at a more or less adequate idea of the minuteness of the cause, and though all experimental evidence is here shut out, we are not entirely left without guidance; for beyond the length of a wave of blue light the microscope has never ventured hitherto. The sources of disease are being rapidly illuminated by hygenic light, and without an intention on our part of appearing uncharitable, we would simply transport the conception of the origin of all epidemic, contagious diseases, regardless of climate and other circumstances, to certain combined conditions over which man could exercise unqualified control. Disease must be propitiated by means different from those usually resorted to. The first requisite towards such propitiation is knowledge as regards its origin; the second is *action*, shaped and illuminated by that knowledge. In a very noble address before you last year, our retiring President made this remark: "I should insult your intelligence did I not claim that a prouder record for medicine is to be found in the preventive side of its work."

J. C. ROSSER, M.D.,
Chairman.

COMMITTEE ON MEDICAL EDUCATION.

C. N. HEWITT, CHAIRMAN.

I will not inflict upon the Society a report on medical education after the customary and stereotyped sort—a mixture of old theories and personal ideas, winding up with the lament that after all it makes little difference, as the profession are not united; the way is not open for any reasonable reform, etc.; on the contrary, I am able to report that a step in medical education has been taken by the Regents of the University of Minnesota which pnts our State in this regard far in advance of any other State in this country, and has placed in the hands of the medical profession of Minnesota the opportunity for the elevation of the standard of requirements for degrees in medicine to the highest grade proposed by the best of our American colleges.

It will be the pleasant duty of your Committee, therefore, to review this important movement and to make a brief study of its bearing upon the future of medicine in our own State, and indirectly throughout the country.

But before entering upon this review and discussion, permit me to call to your minds what are the essentials of medical education to-day.

There are two clean-cut standards put before our students and they are becoming better defined every day. One is the popular criterion and the other the professional one. The first requires no elaborate treatment here. There are none who hear me who do not know what it is, and the dangers and professional shipwreck it has wrought for so many, young and old, who have surrendered to it.

Its boasted test, evidence of value, and "bait for gudgeons," is popularity, as proven by much business and large pecuniary returns. Its standard is a commercial one, assimilating business and professional aims and methods till the last is swallowed up by the first. Its demands are such as no faithful, educated physician can concede. Yet the "solid results" (for its advocates use the language and methods of the Boomer) are so seductively presented that in these times successfully to resist the temptation is a capital test of the metal a man is made of.

The other standard, the professional, has two degrees: the conventional and the higher and more difficult one, which is the practical accomplishment of the very best among us. This last is the one we all aim at, but the conventional standard is the average of our success. Fortunately the conventional standard is a rising one, and a little thought will do away with the necessity for any argument to satisfy us that in its gradual and steady advance rest our surest hopes for the future of medicine, so far as that future depends upon the members of the profession itself. The leading difficulties in our way today are:

1st. The practical absence of any compulsory standard of preliminary education before professional study can begin.

2d. The variable character of the actual instruction and requirements for degrees in medicine in even the best existing colleges.

3d. The specialization of instruction and study and of clinical work in medical colleges.

4th. As one result, the development of "specialties" in practice, and so the frequent absence of all practical knowledge of "general practice" on the part of young men taking up such specialties from the date of graduation.

5th. The concentration of such special practitioners in large centers of population.

6th. The competition for students which, as a prominent recent example shows, compels a reduction of requirement for degrees to a low and debased standard—an average, in fact, of all colleges at all respectable who teach and confer degrees.

7th. The absence of thorough instruction in hygiene, public and private, which must underlie all proper preparation for the practice of medicine now and hereafter.

8th. The permitting teaching faculties to sit in judgment on their own work and to confer degrees on their own students.

This last is admitted by the best of our medical college professors to be the one evil whose removal must precede any true reform in existing schools of medicine.

Add to this fatal mistake in college organization which comes at the expiration of medical study, the other as bad, which precedes it, the absence of any proper preliminary education as an invariable requirement, and the result, as we see it in the condition of the profession to-day, is not difficult of explanation.

To remedy these evils the general practitioners who constitute the body of the profession have hitherto failed, and for evident reasons. The control of the professional organization in this country is largely in the hands of the faculties of colleges and of the specialists, as witness the proceedings of the last two meetings of the American Medical Association at St. Paul and Cleveland.

The lessons of such control and the recognized evils of our position has resulted in many attempts at a change and with varying success in different States. In Minnesota the organization of any medical college as a part of our university system was wisely deferred by the regents, though application has more than once been made to them to that end within the last dozen years. In 1882, after a careful study of the subject, a member of this Society addressed a communication to the regents urging

that the time had come for the organization of the Medical College of the University upon a basis which should correspond with the necessities of the medical profession and of the people of the State. The plan proposed was to make the faculty in medicine an examining body solely, whose certificate should alone entitle to the degrees in medicine of the university. No member of the faculty to have any connection with any other school of medicine. The examinations to be oral, written and clinical, and of such a character as to thoroughly and fairly test the qualifications of all candidates for degrees. Said examination also to be adapted to satisfy the demands of all capable and faithful students, who, wherever their education may have been gotten, can find here an impartial test of its character and worth. To that end the diplomas should specify on their face the exact standing in each department of medicine of the recipients, in this way doing away with the present method, which is based upon a standard of the lowest attainment of any who may receive the degree.

To all who know from personal experience the influence of a worthy preceptor upon the future life and success of his pupils, it will not be necessary to defend the further proposition that at least one year of continuous study in competent preceptor's office should follow a satisfactory preliminary literary and scientific examination, and that whatever the college courses taken by said student, he should be under the guidance and direction of his preceptor.

Further, with the same intent, it was proposed that whenever in any centre of population in the State, at least four physicians of recognized ability, having charge of a hospital of at least twenty beds, should organize a preparatory school of medicine, giving such instruction, text book, oral and clinical, as shall equal the minimum

standard of the university faculty for such schools. The certificate of six months attendance at such school shall be recognized as equivalent to one year's professional study. There is certainly no reason in lack of ability and opportunity why several schools of this character should not be immediately organized in this State.

Their advantage to the medical men who constitute their faculties as affording means and stimuli for keeping their elementary studies "bright" and for original and other professional work, is evident. The natural and healthful rivalry growing out of the tests of these respective methods, in the university examination of their pupils, will be a powerful aid to the elevation of the average of professional knowledge and the creation of an "esprit de corps," of which we at present stand greatly in need.

Other details might be given, but are here unnecessary; they will come in farther on.

The regents gave the proposition a courteous hearing and referred it to a committee of medical men and the President of the university to prepare a working plan. That committee made a careful study of the whole subject of medical education at home and abroad, and made a careful and thorough report. They adopted the proposed plan, filled out its details, and submitted them to the regents. It was taken up in detail by the regents and fully and carefully considered in all its bearings. As the outcome of the discussion the plan was adopted. A majority of the faculty of the College of Medicine were elected; the remainder will be selected very soon, and before the year expires the college will be ready for its work.

Appended to this report will be found the announcement of the organization of the college with sufficient detail to give a general idea of its work and methods. A fuller announcement is in preparation, giving all the details necessary for students and physicians wishing to apply for

degrees and licenses, and as to the organization of preparatory schools of medicine.

Your committee are glad to be able to state that the organization of the medical college as established by the regents, to meet the urgent demand for better education and a more thorough and impartial examination of candidates for degrees in medicine, has met with the cordial and often enthusiastic approval not only in this society, but among the best men of all other schools of practice in the State. No more convincing evidence of its necessity could be adduced. There is a common and growing feeling that it is just what is needed, and that the best elements, not only professional but of all our population, are determined that it shall succeed.

In concluding this branch of the report, your committee call attention to one important feature of this plan which makes abundant provision for further development as the necessities of the future may require.

Its essential features are, that the faculty are an examining body solely, as respects the obtaining the degrees in medicine of the university. But to secure as far as possible proper preparation for such examinations, they are authorized to facilitate and reorganize the organization by preparatory schools of medicine as already described; to recognize especial excellence in several departments of medicine, and secure formal acknowledgment thereof; and to restore and give its proper place to the functions of the preceptor in medicine, which under existing methods seems likely to be crowded out by the efforts of medical colleges to monopolize the entire instruction of students. In all respects this faculty has been recognized as the representative of the profession in its highest work as respects itself, the guardianship of the admission to its membership. It is not an exclusive function, it is a delegated one, practically from the profession of medicine itself in our own state.

However faithfully the college may perform its duty, it will fall far short of its intended work if the profession by its best representatives do not come up and heartily and steadily perform its share. Will medical men do this?

The writer from a long and wide acquaintance ventures the prediction that they will.

It will be well to remember that what we have already done has cost long years of untiring effort. In the future as in the past, our motto must be, "Watch, work and wait." Time is an essential element to success. There is every encouragement that not only in Minnesota but all over our country medicine will advance in the directions here discussed, rapidly and safely to a higher standard and greater achievements.

But there is another matter upon which the society and all well-disposed people are to be congratulated.

After the work done by the regents of the university in organizing the college of medicine, the law for regulating the practice of medicine, familiarly known as the Illinois Law, was adopted by the Legislature with some modifications.

In the bill as at first presented the State Board of Health, we (as in Illinois) were selected as the examining board; but it was not difficult to show that this was not properly a duty for us, and might be an obstacle to the success of the work we had been selected to do.

Upon reconsideration the medical faculty of the university were assigned as an exanining board.

To those familiar with the literature of the subject, it will be seen that this action was the practical adoption of the methods as successful in Germany, with the exception that our faculty performs a double duty.

There are several probable advantages in the Minnesota plan, and others may appear as it is put into practice.

It must be distinctly remembered, however, that these

two functions of the faculty of the college of medicine are entirely separate and apart and have no relation to each other.

The State Examining Board have these duties:

1st—To issue certificates to all graduates of medical colleges in good standing.

2d—To issue certificates permitting to practice all persons who have continuously practiced medicine in Minnesota more than five years.

3d—To examine and license all who having no diploma as above, or not having practiced medicine for five consecutive years, wish to practice here, and who pass a satisfactory examination.

4th—To deal in accordance with the law with all practitioners of medicine guilty of "unprofessional conduct" in withdrawing license to practice in the State.

As an examining board they give licenses to such as pass an examination much below that required for degrees in medicine, and to such as pass they issue a license, not a diploma, and not conferring the title of Doctor of Medicine.

The evident object of this law is to weed out the most shameless and apparent quackery in the name and in the interest of the people of the State, and to maintain such a guard on the practice of medicine as shall, as far as possible, prevent the outrageous violation of decency, health, and morals which has hitherto gone unpunished.

The wish of the board is that with time, patience, and tact, the expectation of the legislature and the people may be realized, and the laws prove a partial bulwark against fraud and deception in medicine, and its operation be an inducement to all honest practitioners of medicine not graduates of reputable schools to obtain degrees in such schools as being, in the long run, the safest and wisest course.

Your Committee cannot conclude without reminding

the Society and all members of our profession that the universal facilities for higher education, which we have been considering, are *accomplished facts in Minnesota now*, and that while the possession of them is just cause for hearty congratulation, they increase, by their own value, our personal and Society obligation, as members of that which we proudly claim to be a learned profession, to prove our faith and our claims by our works.

Let us never forget this, and renew our pledges in success, which we have so frequently promised to renew if only the opportunities we have won were afforded to us.

CHARLES N HEWITT.

APPENDIX.

UNIVERSITY OF MINNESOTA.

THE COLLEGE OF MEDICINE.

Faculty.—Professors Hewitt, Staples, Hand, Leonard, Millard (Secretary), The President.

Object.—It is the duty of the faculty of this college to test and ascertain by examinations, experiments and other appropriate means the qualifications, proficiency and skill of all candidates for degrees in medicine and surgery and to recommend them to the board of regents for graduation accordingly.

No instruction is offered in this college. The faculty is an examining body solely.

Examinations.—These are :

(1) The Entrance Examination,

(2) The Scientific Examination,

(3) Two or more Professional Examinations.

The Entrance Examination embraces the following subjects:

(1) The English language, including writing, spelling, grammar, analysis and composition.

(2) Arithmetic, elementary algebra and plane geometry.

(3) Geography, United States history and the outlines of general history.

(4) Latin grammar and Cæsar's Commentaries (or any one Latin author,) or an equivalent knowledge of German, French or of one of the Skandinavian languages.

This examination is conducted under the direction of the general faculty.

Applicants who may have recently passed the examinations for admission to the freshman class of the collegiate department of the university are excused from the entrance examination.

The Scientific Examination embraces the following subjects:

(1) Physical geography,

(2) Natural philosophy,

(3) Elementary botany,

(4) Chemistry,

(5) Drawing, free hand or mechanical.

This examination is conducted by a committee of the general faculty, one of whom must be a professor of this college.

Applicants who bring a final certificate from the scientific course of the collegiate department are excused from the scientific examination, as well as the entrance examination.

Applicants who bring a final certificate for the classical or modern courses of the collegiate department are excused from the entrance examination and the scientific examination except in chemistry.

Baccalaureates of the college of science, literature and the arts, of mechanic arts and of agriculture of this university, and graduates of any reputable college or univer-

sity are excused from the entrance and scientific examinations and receive a credit of one year on professional study.

The Professional Examinations embrace the following subjects:

(1(Astronomy and physiology,
(2) Pathology,
(3) Materia medica,
(4) Therapeutics,
(5) Medical chemistry,
(6) Preventive medicine,
(7) Practice of medicine,
(8) Surgery,
(6) Obstetrics,
(10) Diseases of women and children,
(11) Diseases of the nervous system,
(12) Medical jurisprudence.

These will be arranged so that applicants may attend them in convenient succession. Dates will hereafter be announced in a special circular.

Degrees.—All candidates who pass the entrance, scientific and professional examinations including the appropriate clinical and experimental tests incidental thereto, and give satisfactory evidence of having pursued professional studies as required by the by-laws, being twenty-one years of age or upwards, and of good moral character, are recommended by the faculty of the college to the board of regents to receive the degree of bachelor of medicine (M. B.), which degree duly conferred is the warrant of the university of Minnesota for the practice of medicine and surgery.

Whenever the examinations in any case evince a high degree of proficiency in the literature, theory and practice of medicine, the faculty of the college permit the candidate to present and defend a thesis; this being done to their satisfaction they recommend the candidate to receive at once the full degree of doctor of medicine (M. D.)

Any bachelor of medicine of this university, who furnishes satisfactory evidence that he has been actively engaged in professional practice for three years after his graduation, and who presents and defends a thesis in the manner prescribed is recommended to receive the degree of doctor of medicine (M. D.)

Doctors of medicine of other colleges of medicine recognized by the board of regents upon the recommendation of the faculty of this college are recommended to receive the degree of doctor of medicine of this university upon successfully defending a thesis in the manner prescribed.

All candidates for the first degree must furnish satisfactory evidence that they have severally pursued the study of medicine for four years in the office of and under the personal direction of a physician in active practice, who is a graduate of some college or school of medicine recognized by the Board of Regents, upon the recommendation of the faculty of this college.

Provided, however, that

(1.) One course of lectures with other work incidental thereto in a college of medicine recognized as above shall be reckoned as equivalent to eight months of such study.

(2.) One term of six months in a school of medical instruction, organized and conducted in conformity with the by-laws, shall be equivalent to one year of such study under a preceptor.

(3.) Three courses of lectures with work incidental thereto in colleges of medicine recognized as above, shall be equivalent to three years of study under a preceptor. One year at least must in all cases have been passed in a preceptor's office.

(4.) Graduates of colleges and universities receive a credit of one year on professional study in consideration of superior literary and scientific attainments.

The faculty of this college have authority to provide

examinations for candidates for licenses in sanitary science, dental surgery and other specialties. Only bachelors or doctors of medicine can become such candidates.

Regulations.—All professional examinations are made matters of record. Written examinations are in form for convenient preservation.

Stenographic reports are made of oral and clinical examinations, which are written out for preservation.

Any person detected in any dishonesty in his examinations is at once stricken from the roll of candidates.

All theses must be upon subjects approved by the faculty, must be founded on original work, and certified as the productions of the candidates. Twenty-five printed copies of each thesis must be furnished to the faculty before reading and defense.

STATE MEDICAL EXAMINING BOARD.

The foregoing statements relate to the College of Medicine, regarded as a branch of the University federation.

By virtue of an act of the Legislature of 1883, approved March 6, 1883, entitled "An act to regulate the prctice of medicine in thc State of Minnesota," an additional and entirely separate function has been imposed upon the faculty of this college. The law referred to constitutes the faculty of the College of Medicine of the University of Minnesota the State Medical Examining Board.

The following is the substance of the statute:

AN ACT TO REGULATE THE PRACTICE OF MEDICINE IN THE STATE OF MINNESOTA.

Be it Enacted by the Legislature of the State of Minnesota:

SECTION 1. That every person practicing medicine in any of its departments shall possess the qualifications required by this act. If a graduate in medicine, he shall

present his diploma to the examining board hereinafter constituted, for verification as to its genuineness. If the diploma is found genuine, and if the person named therein be the person claiming and possessing the same, the board shall issue its certificate to that effect, signed by all the members thereof, and such diploma and certificate shall be conclusive as to the right of the lawful holder of the same to practice medicine in this State. If not a graduate, the person practicing medicine in this State shall present himself before said board and submit himself to examination as the said board shall require; and if the examination be satisfactory to the examiners, the said board shall issue its certificate in accordance with the facts, and the lawful holder of such certificate shall be entitled to all the rights and privileges hereinafter mentioned.

SEC. 2. The faculty of the medical department of the University of Minnesota shall organize as a board of examiners as herein provided, within three months after the passage of this act; they shall procure a seal and shall receive, through their secretary, applications for certificates and examinations; the president or secretary shall have authority to administer oaths; and the board to take testimony in all matters relating to its duties; it shall issue certificates to all who shall furnish satisfactory proof of having received diplomas or licenses from legally chartered institutions in good standing; it shall prepare two forms of certificates, one for persons in possession of diplomas or licenses, the other for candidates examined by the board; it shall furnish to the county clerks of the several counties a list of all persons receiving certificates.

SEC. 3. Said board shall examine diplomas as to their genuineness, and if the diplomas shall be found genuine as represented, the secretary of the board shall receive a fee of one dollar from such graduate or licentiate, and no further charge shall be made to the applicants; but if it

be found fraudulent, or not lawfully owned by the possessor, the board shall be entitled to charge and collect twenty dollars of the applicant presenting such diplomas. The verification of the diploma shall consist in the affidavit of the holder and applicant presenting such diploma, that he is the lawful possessor of the same and that he is the person therein named.

SEC. 4. All examinations of persons not graduates or licentiate shall be made directly by the board, and the certificates given by the board shall authorize the possessor to practice medicine and surgery in the State of Minnesota.

SEC. 5, requires holders of certificates to have them recorded with county clerks.

SEC. 6, requires county clerks to keep a list of certificates recorded.

SEC. 7, provides for a fee of $5.00 to be paid into the State treasury.

SEC. 8. Examinations may be made in whole or in part in writing, and shall be of an elementary and practical character, but sufficiently strict to test the qualifications of the candidate as a practitioner.

SEC. 9. Certificates may be refused to persons guilty of unprofessional or dishonorable conduct. Appeal may be made to the board of regents.

SEC. 10. Any person shall be regarded as practicing within the meaning of this act, who shall profess publicly to be a physician, and to prescribe for the sick, or who shall append to his name the letters "M. D." But nothing in this act shall be construed to prohibit students from prescribing under the supervision of preceptors or to prohibit gratuitous services in case of emergency. And this act shall apply to commissioned surgeons of the United States army and navy.

SEC. 11, requires itinerant vendors of drugs, etc., and healers, to pay a license fee of $100 a month.

SEC. 12. Any person practicing medicine or surgery in this State without complying with the provisions of this act, shall be punished by a fine of not less than fifty dollars ($50) and not more than five hundred ($500), or by imprisonment in the county jail for a period of not less than thirty (30) days nor more than three hundred and sixty-five (365) days, or by both such fine and imprisonment for each and every offence; and any person filing or attempting to file, as his own, the diploma or certificate of another, or a forged affidavit of identification, shall be guilty of felony, and upon conviction, shall be subject to such fine and imprisonment as are made and provided by the statutes of this State for the crime of forgery; but the penalties shall not be enforced till on and after the thirty-first (31) day of December eighteen hundred and eighty-three (1883). Provided that the provisions of this act shall not apply to those who have been practicing medicine five (5) years within this State.

The faculty are now duly organized as such examining board. All communications on this branch of their work should be addressed to the Secretary, Professor P. H. Millard, M.D., Stillwater, Minn.

REPORT ON OPHTHALMOLOGY.

BY A. BLITZ, M. D., CHAIRMAN.

We are still moving onward in ophthalmology, keeping pace with the march of time. The grand army of investigators in this department is yearly increasing, and their researches bring forth new ideas, new facts, giving us more light and rectifying some of our former errors, thus creating a clearer and more definite knowledge of the science and art of this branch of medicine.

From year to year new advances are made, here throwing out some old untenable theory or dropping some useless remedy, and there giving us some new idea, remedy or device, thus adding story after story to our grand storehouse of knowledge, filling it with all that is new in remedies and appliances, both of a medicinal and mechanical nature. with which to alleviate the sufferings of our fellow beings.

With this view in mind, ophthalmologists have in late years spent much time and made extensive investigations on the subject of color-blindness.

This subject derives special importance, from the fact that many railway employes and sailors are color-blind.

There is no safety in traveling over a road whose managers employ men regardless of any defect in their vision. Every road uses color-signals, and at night differently colored lanterns.

How easy is it for a color-blind official to make a mistake in the color of the signal, and thus be the cause of accidents and great loss of life. Is it not time that some steps were taken by this Society to urge upon our

Legislature the necessity of making a law compelling railway and navigation corporations to have the vision of their employes properly tested and employ only those whose vision is normal in every respect?

In many countries the importance of this subject has been recognized, and such corporations are compelled to properly test the vision of their employes.

Among the first to call attention to the prevalence of color-blindness was Professor Holmgren, of Upsala, Sweden, who published his labors and investigations in this line in Swedish, in 1877. His book was immediately translated into the French, and a year later into the German and other languages. In our own country, Dr. B. Joy Jeffries, of Boston, has given this subject a great deal of study, and in 1880 published his book on color-blindness, urging the necessity of the color-test in all railway and navigation employes.

Only very little has been done in this country to make practical use of this test; but let us hope that at no distant day every State in the Union will have a law compelling railway and navigation corporations to employ only such persons as, after a careful and thorough examination, have been found free from color-blindness or other dangerous defects of vision, thus securing greater safety to the traveling public.

New Remedies in Ophthalmic Practice.—Chief among these is the infusion of licorice bean (jequirity, abrus precatorius) found in Brazil, and quite recently brought into notice by De Wecker of Paris, who made numerous experiments with this infusion in chronic trachoma and in cases of inveterate pannus of the cornea, where a rapid suppuration is required. He reports very gratifying results.

The infusion was prepared according to the formula extensively used among the natives of Brazil, and is as follows: Pulverize thirty-two beans, macerate them in five

hundred grammes of cold water during twenty-four hours, then add five hundred grammes of hot water and filter immediately after cooling. The strength of the infusion can be regulated according to the requirements of each case. De Wecker claims that when applied to the conjunctiva with a brush, instilled into the eye, or applied on linen compresses to the outer surface of the lids, this infusion produces, within a few days, a most decided croupous or purulent conjunctivitis, which, after the discontinuance of the irritating agent, rapidly subsides, leaving a previously trachomatous lid without any trace of granulation, and a previously opaque cornea without a vestige of infiltration and vascularity.

This remedy is certainly a very valuable acquisition to our materia medica, and should the claims of De Wecker, Moure and Gruening be verified after further experiments, it would be a great boon to be able to dispense with the long and tedious line of irritating treatment in chronic trachoma, and especially in chronic inveterate pannus, which has heretofore resisted almost any form of treatment. Many oculists have recommended in inveterate pannus, inoculation with blennorrhoic pus, taken from a new-born child, that is otherwise in a healthy condition, and some have even gone so far as to recommend the inoculation with gonorrhoic pus. I am glad to say that not many oculists followed this heroic and revolting practice, which, while it may occasionally give a good result, is in the majority of cases only fraught with danger, especially since if only one eye is affected, the good one is certainly in danger of becoming inoculated and perhaps lost, as it is almost impossible to sufficiently regulate the inflammatory action which follows and check it before going too far. Besides, there is danger of infection with syphilitic virus from urethral chancre, which would be a still greater calamity.

If this new remedy, the irritating action of which can

be regulated at will, should prove by further experiments to come up to the eulogism of its champions, then indeed will it prove a blessing to those afflicted with inveterate pannus cornea.

Another remedy which has come into quite extensive use in eye diseases is iodoform. A number of oculists, among them Mooren, Galezowsky, Priestly, Smith, Deutschman, Dujardin and others, report its use in the form of a salve or in fine powder. It has been tried in cases of trachoma, purulent, croupous, diphtheritic, gonorrhœal and in phlyctenular conjunctivitis, in blennorrhœa of the new born, and in corneal affections.

I have used iodoform either in fine powder or in glycerine for a number of years, and have found it especially useful in leucoma and parenchymatous affections of the cornea, and although I have had some good results from its use, I must say that while it may be equal, it certainly is not superior to other remedies we use in some of the above named diseases, and especially in blennorrhœa of new-born children, where its action is of less benefit than that of nitrate of silver.

Massage in Eye Diseases.—In the archives of ophthalmology, Dr. Herrman Pagenstecher of Weisbaden, Germany, some time ago called attention to "massage" in diseases of the eye. He claims beneficial results from his procedure in affections of the cornea, conjunctiva, sclera and ciliary body.

He says of his manner of performing massage: "We first press lightly against the edge of the upper or lower eyelid, as the case may be, with the thumb or forefinger, and then rub the lid as rapidly as possible to and fro over the eyeball, either in a radiating or circular direction. The former motion is the more valuable of the two, and the one which is to be resorted to in most diseases."

Pagenstecher admits that he also uses the yellow oxide of mercury ointment in conjunction with massage.

Without doubt Pagenstecher may have had some good results from "massage" in connection with the application of the yellow oxide of mercury ointment, for we all know what a capital remedy this ointment is in many affections of the eye, even when not used in conjunction with massage, and especially in those diseases in which he claims the best results from his remedy.

I certainly do not think that Pagenstecher is the first oculist who has used this remedy. I had practiced a similar method at least eight years before I read of the method of Dr. P.

One of my patients one day asked me which way it was best to rub the eye, from within outward or vice versa. I told him I did not think it made any difference. He then told me that his eyes felt ever so much better when he rubbed the lid lightly over the ball. I took the hint, and have always since performed what Pagenstecher calls "massage," in a certain manner, when applying ointments or the glycerates to the eye, especially when I desired to irritate the cornea, sclera or conjunctiva in certain affections, to stimulate the circulation and encourage more rapid absorption. The only difference between his method and mine is that I take hold of the skin of the eyelid with my thumb and index finger and gently but quickly rub the lid over the eyeball.

I did not at the time think anything particularly about this movement which he calls "massage;" I only thought of its increasing the action of the medicine by adding the mechanical irritation.

I doubt very much whether Pagenstecher will find "massage" without the additional use of the yellow ointment, sufficient to cure all case in which he claims such good results, although it undoubtedly assists the action of the ointment.

An interesting case of Symblepharon.—Mr. J. M. H— came to me on June 14, 1882. I examined his right eye

and found both lids grown to the eyeball, commencing at the inner canthus and extending to the middle of the cornea. The patient stated that quite a number of years ago he was treated for a pterygium situated at the inner part of that eye. The physician burnt the growth with caustic to such an extent that it resulted in the adhesion of the lids to the globe. Some time after this the patient went to a physician in Menomonee, Wis., and the latter divided the adhesions without making any provisions whatever to prevent the reunion of the divided parts. The same operation was repeated some twenty-five times, of course with like results, reunion of the divided surfaces, until both patient and surgeon became tired of the fruitless operations, as the adhesions became only more firmly united, so that every movement of the eyeball would be painful and the slightest cold would affect it, causing the adherent structures to become engorged, swollen and painful.

I advised the following operation, which I performed with the assistance of Drs. Wells and Burwash, on the 15th of June, 1882:

The patient being placed in the recumbent position, I divided the adhesion of the upper lid, commencing at the corneal portion and extending to the inner canthus, thus freeing the upper lid from the globe, but in such a manner that a strip of membrane three-eights of an inch in width, which had been an extension of the lid margin, downward over the eyeball, was included in the section. I now turned this strip of membrane under the raw part of the lid so as to form for it a lining (with its smooth surface turned towards the globe), and stitched it well back, bringing the sutures through the lid and skin where they were tied.

I did not do anything to the lower lid at that sitting, not having sufficient membrane left to make a lining for

that similar to the one made for the upper lid, so I waited until the membrane was reproduced.

I removed the sutures on the fourth day. So far the result was very good indeed. The upper lid was free, adhesion of the new lining perfect, and the movements of the globe painless. On June 22d I completed the operation by doing for the lower lid the same that I did for the upper lid at the previous sitting. After removing the sutures I found the movements of the globe as free as a somewhat contracted internal rectus muscle would permit, the lids had their normal positions, the strained feeling and pain in moving the eyeball had entirely disappeared, and the cicatrix on the globe was healing very nicely.

The patient left on June 29th for his home in Canada.

Four months later I received a letter from the patient, stating that the eye was getting along very well indeed, the lids were free, and the eye turned as well as the other. He could see much better with it. This is certainly a very gratifying result.

Some Practical Remarks on Ophthalmia Neo-natorum. —This disease is, in the initial stage, seen more frequently by the general practitioner than by the specialist, owing to the fact that the family physician being at hand is of course consulted as soon as anything of an inflammatory nature is detected in the eyes of the infant, while the specialist only sees such cases in their incipiency through the recommendation of the family physician, or later only when perhaps the disease has fully developed and the parents have become alarmed on account of the swelling of the lids or the increase and character of the secretions. I had hoped to receive reports of a large number of cases of ophthalmia neo-natorum from the members of this Society in order to collect some statistical points, but I am sorry to say that of the 260 circular letters I have sent out to the members of this Society I have received twenty-

one responses, and only five members have been so kind as to send reports, four of which are on this subject. The reasons for particularly asking in my circular letter for reports on this subject were that I imagined its frequency and destructive character would certainly cause interesting researches and stimulate the members of the Society to report their observations and bring out many facts which might be of value in treating the disease.

Ophthalmia of the new-born is of much more frequent occurrence than is generally known, as can be easily seen by the large number of children having defective vision, and which can be traced back to the ravages of this disease.

In many cases the physician does not see the mother until actual labor is either just commencing or has been in progress, and of course can use no prophylactic measures, but has to give his entire attention to the case, viz: to conduct the labor to a satisfactory termination as regards both mother and child; but as soon as the child is born it is handed to the nurse, while the physician attends to the removal of the placenta, after which he gives some general directions about the mother and takes his leave.

The nurse now has the entire management of the infant.

Ophthalmia of the new-born, strictly speaking, cannot be considered as a distinct disease, for it assumes the form of either catarrhal or purulent ophthalmia.

In order to better follow the leading points in this part of my report we have to consider the causes of the disease.

In the majority of cases blennorrhœa of the new-born is caused by direct infection with the secretions of the vagina of the mother. These secretions are not necessarily gonorrheal, although in a large number of cases their virulent character must be admitted.

The fact is, that any purulent or muco-purulent secretion existing in the vagina during the delivery of the child may find its way into the conjunctival sac and pro-

duce the disease. Again, in washing the child after delivery some nurses, either through carelessness or ignorance, bathe the body first, and afterwards the face and eyes with the same water. This in itself is sufficient to produce the disease, and it is really astonishing that we do not see more of these cases than we do, and we certainly would, were it not for the fact, as De Wecker truly says, "that the infant instinctively curls its eyelids inwards. It is only in cases where the infants' eyes are prematurely opened that they contract contagion."

Often the nurse will forget to wash her hands, after wiping the lochial discharge from the vagina of the mother, and immediately after attend to the child, and so may carry the contagion by her fingers to the eyes of the infant. Hausman says, "sometimes the sero-purulent secretion of a sore nipple or inflamed breast may be the cause, or it may also be produced by pus from a sore upon the child, or by foreign animal tissue, especially pieces of the placenta placed upon the eyes. One eye may also infect the other, or it may be conveyed upon the eye by the substances used in oiling the finger, or from local applications."

There are yet some other causes, such as living in a district where infectous materials abound. Again, infants are allowed to look at a bright light, either natural or artificial, and in a comparatively short time afterward we may have the disease develop.

The symptoms may at first resemble those of a simple catarrh. On the third or fourth day after birth it may be noticed that the eye-lashes stick together and that some crusts have formed on the borders of the eyelids. One eye may be affected first and in a day or two the other. So far of course the disease only resembles a mild form of catarrhal conjunctivitis, and the attendants may carelessly think that it requires no direct treatment, as they are often prone to believe that the inflammation will

pass off in a few days. In this they are mistaken, as perhaps on the next day they may find the redness and swelling increasing, the lids much more œdematous, and the conjunctival sac filled with a yellowish secretion of a sero-mucous character. The redness and swelling still continue to increase, the discharge changes in consistency, and when you lift the upper eyelid a drop or two of pus will run out. This discharge will soon become more creamy and copious, running over the cheeks of the infant.

By that time the swelling of the palpebral and ocular conjunctiva may have increased to such an extent that too much pressure is exerted upon the eyeball, and the nutrition of the cornea is interfered with.

The swelling of the lids makes it difficult to open them, and when it is accomplished it is found that the swollen conjunctiva has formed a wall around the cornea, and the latter is completely hidden by the pus whieh covers it. Soon infiltration of the cornea may take place, nlcerations and perforation follow, and loss of the eye result.

Prophylactic Measures.—If the attending physician sees the mother before labor has fairly begun it will be well to order an injection of some disinfectant solution of either chloride of sodium, chlorate of potass. or boracic acid, and washing out the vaginal secretions. The water used should of course be warm. After delivery, the physician should see that the nurse use a clean sponge or cloth (which should not be used for any other purpose) in washing the child's eyes, and last but not least, that she wash the eyes first, and then the rest of the body. He should also admonish both mother and nurse to always wash their hands well before cleansing the eyes of the child, especially if the mother is suffering from any vaginal discharge.

To follow this course will often be the means of saving the eyes of some little innocent babe from destruction. During his subsequent visits the physician should not for-

get to look at the child as well as to the mother, and at the very first signs of ocular irritation or inflammation he should at once institute proper treatment.

Treatment.—The first necessity in the treatment is cleanliness. The eyes should be cleansed frequently with warm water, which should be used very freely. Water is the best and certainly the handiest disinfectant we have, and used in abundance will destroy any contagious matter, or at least materially lessen its power.

As soon as the discharge makes its appearance it should be washed away with a soft sponge. Several of them should always be ready, and cleansed with warm water immediately after being used.

In severe cases, and where only one eye is affected, the healthy one should be hermetically sealed with adhesive plaster, and carefully watched to prevent infection.

The room must be darkened enough to shut out bright light, so as to avoid irritating the little sufferer, and make him shrink and contract the orbicularis.

As soon as the little patient opens the eyes he should be encouraged in the effort, on account of the beneficial influence in expelling the irritating secretions from the conjunctival sac, and stimulating the sluggish circulation.

As a rule when the child opens its eyes, we may consider the danger over, but care must be taken to prevent a relapse, as often the symptoms may become worse than they were before.

Wolfe says, "When called to a case in an advanced state of suppuration—say of three or four weeks' standing—you must take care in opening the eyelids, for the eyeball may be just on the point of bursting, and the effort to lift the lids and the spasms of the orbicularis may be the means of hastening on the inevitable, for which you will get the entire blame."

There is quite a diversity of opinion on the question of hot and cold applications in blennorrhœa of the new-

born. Both heat and cold have very warm advocates. I have used either, according to the condition of the eyes, but more often the former than the latter.

Applications of a weak solution of atropine, one grain to the ounce, should be made every three or four hours, besides syringing very carefully with a solution of boracic acid, from three to five grains to the ounce of water.

Many oculists still insist upon following the old line of treatment, the immediate use of a ten-grain solution of nitrate of silver.

While the nitrate of silver has very good antiseptic properties and acts very well when used in weak solutions of one or two grains to the ounce, I must say that the stronger solutions are too irritating and certainly often do harm when used at the outset of the disease.

There is absolutely no necessity for such strong medication in this disease, and I will here state my convictions, that the more water and thorough cleansing is resorted to, the less medication will be necessary.

In most cases after cleansing the eyes, I commence with a one-grain solution of atropine every three or four hours, and order a weak solution of either boracic acid, chlorate of potass. or chloride of zinc, with which to bathe the lids and apply to the conjunctival surface as often as every hour, besides the constant application of heat in the shape of compresses, wrung out in warm water. In many mild cases this treatment, if judiciously carried out, will be sufficient to cut short the initial stage of the disease, or even cure it entirely.

In the more advanced stages, and those of a more virulent type, I have the eyelids bathed with a weak solution of either Listerine or eucalyptol, cleanse the conjunctival sac often, and apply a two-grain solution of nitrate of silver.

I do not use a camel's hair brush in making this application, but use a little cotton on a holder.

I prefer the latter on account of its greater cleanliness, as I can always throw it away after making the application, and take a new piece for the next, while in using the brush it may not be sufficiently cleansed and disinfected, perhaps retaining a small particle of matter between the hairs, where it escapes detection, which certainly is injurious when used for the eyes.

In applying nitrate of silver, the physician must exercise his judgment as to the necessity of following it with a solutlon of chloride of sodium or not, according to the state of the cornea.

Should the cornea become affected, and ulceration result, then the greatest care is necessary in making the application of nitrate of silver as much as possible to the conjunctival surface only, and then washing away the excess.

The use of atropine or duboisia must be continued during the entire treatment.

If the lids and conjunctiva are very much swollen and exert too much pressure upon the ulcerating cornea, we must remove the pressure by making an incision through the external commissure, about one-half of an inch in length, taking care to cut only through the skin, orbicularis muscle and ligament, but leave the conjunctiva intact. No sutures are necessary.

This operatlon will bring relief at once, not oniy in removing the pressure from the globe, but also in emptying the turgid blood-vessels and improving the circulation.

This treatment, as a rule, will be sufficient in all cases of ophthalmia neonati, and if *carefully* and *judiciously* followed out there is no need of a single child losing its eyes entirely, although in some cases where the cornea has suffered by ulceration, on opacity at the site of the ulcer may remain after the disease has disappeared.

These latter cases must be treated according to the established rules.

Before leaving this subject, I must again call attention to the untiring and extreme watchfulness necessary to prevent bad results. The profession is apt to be rather careless in properly attending to prophylactic treatment in the initial stage of the disease, and perhaps neglect to examine the eyes often enough, or, when it is done, perhaps only superficially, and before any one is aware of it the disease has rapidly advanced, the cornea has become deeply ulcerated, perforated, and the contents of the eyeball escape. The eye is lost, or perhaps both eyes may be destroyed in this manner.

Wolfe says, to use the pithy history which mothers give of the cases: "The eyes were so swollen that the doctor could not get a glimpse of them; and when the swelling fell and it opened its eyes, we found that there were no eyes at all."

A case of this kind came under my observation a short time ago.

On March 16th I was called to see the child of a machinist living on Washington avenue south. I found the mother sick in bed in a very small, poorly-furnished and badly ventilated room. A woman living next door offered to let me examine the child in her house. In fact, it was she who insisted that I should be sent for. The child, a little girl, was just two weeks old, and I was informed had sore eyes since birth. Nothing had been done for the eyes during the first week, uutil the neighbor woman urged the necessity of having a physician see the case, as the lids were greatly swollen and large quantities of pus came away from the eyes.

Both father and mother at first objected to send for a physician, saying "there is no danger;" they had seen sore eyes before get well and these will.

The mother wiped the pus with anything within her reach, and if she could find no rag handy, she would wipe it away with her fingers and smear it around upon the bed-clothes.

At last the physician was sent for, and when he came he merely looked at the child's eyes without touching them, and simply ordered them bathed frequently with warm water, telling the people that the eyes will come out all right, and not even apprising them of the contagious nature of the disease, left the house.

This "heroic treatment" he repeated once or twice during that week.

I examined the eyes of the child and found the lids very much swollen, red and hot, and the edges covered with crusts. The discharge was creamy and very copious. I sponged the lids with warm water and carefully opened them, when a quantity of creamy pus escaped. After cleansing I examined the conjunctiva, which was greatly swollen, red, and had a villous appearance. The cornea of the left eye had been ulcerated, and now it was sunken and contracted. The cornea of the right eye was staphylomatous, uneven, of a grayish color and protruding between the lids. It seemed ready to give way and burst at any moment.

I told these people that both eyes were irretrievably lost, and all I could do would be to remove the disease, but that the child would be blind for life.

The father seemed to take the matter very philosophically, saying that when she grew up he would get her some glass eyes.

The mother would not believe that the eyes were lost, and not desiring to give them a chance to afterwards blame me for the loss of the eyes, I declined to take charge of the case until they would send their physician to see the case with me. This they failed to do, and I refused to treat the child under the circumstances.

There is little doubt in my mind of the gonorrheal origin of the disease in this case, and I must state that our foundling houses and blind asylums contain many cases of blindness of similar origin.

STILLWATER, June 15th, 1883.

DR. A. BLITZ, Chairman Section on Ophthalmology:

Enclosed I send you a report of three cases of excision of the eyeball. An operation properly belonging to the specialist, but one with which the general practitioner will often find himself confronted, and for which he should hold himself in readiness and be competent for its proper and immediate performance. Hoping they may be of interest, I am,

Fraternally yours,

P. H. MILLARD.

Case 1.—A youth of 16 years, while employed in a machine and foundry establishment, was so unfortunate as to receive a penetrating wound of the eyeball by a flying red-hot splinter of steel, the latter remaining within the eyeball. The patient was removed to the city hospital and local applications made. Suppurative choroiditis soon supervened as well as sympathetic irritation of the other eye. Excision was determined and the operation of eneucleation performed at the hospital five days subsequent to the injury. No difficulties were encountered, otherwise than those naturally found in the extensive swollen and inflamed conditions of the organ. The patient made a rapid and satisfactory recovery and within a proper time was provided with an artificial eye.

Case 2.—An adult, aged 25 years. History in brief to the effect that some three years previous to the operation, patient received a penetrating wound of the eyeball from a flying piece of steel. Continuous pain and sensitiveness to light during all this time, with more or less sympathetic irritation of the other eye. Patient was under the care of Dr. Atwood of St. Paul at the time of that gentleman's sickness and death. Patient then came un-

der the care of a Stillwater practitioner. In consultation with the latter gentleman I operated and eneucleated the eyeball. Found complete disorganization of its contents. Patient made a quick recovery and now wears an artificial eye, with complete absence of neurotic symptoms.

Case 3.—An adult, aged 30 years. The left eyeball was wounded and penetrated by a flying splinter of steel during July, 1881. The patient went to Dr. Atwood of St. Paul for treatment. Dr. A. gave him conservative treatment. Owing to pains and sympathetic irritation of the other eye, which continued with more or less severity, Dr. A. divided the optic nerve of the injured eye. The result was happy for the time being. A complete absence of neurotic symptoms was had. But three months later symptoms of irritation returned in all their severity. Dr. A. decided to eneucleate the diseased eyeball and set the date for the operation, but was taken sick the appointed day. The patient then came into my hands. I operated Sept. 1st, 1882. The patient made a good recovery, and during the fall had an artificial eye fitted for use. The latter was worn during the winter. Did not hear from the patient till a few weeks ago. During the past month or two he has been under the care of Dr. Atwood's successor, Dr. Fulton, for painful stump. Not long ago Dr. F. amputated the latter with relief again from neurotic symptoms.

This would indicate either a chronic irritative state of optic nerve from no well defined cause, or that the operation of severing the optic nerve for the purpose of saving to the patient the natural eye is not beneficial in its after effects.

OFFICE OF C. G. SLAGLE, M.D.,
WINNEBAGO CITY, Minn., April 9, 1883.

DR. A. BLITZ, M. D., Minneapolis.

My Dear Doctor: In response to your solicitation for some expression from me for our Committee on Ophthalmology, I desire to state as briefly as possible that as general country practitioners we have little of interest to offer you in that special department of our profession, as we can only observe and treat them in a general way, recommending them as far as possible to "specialists" for more scientific treatment than we can be expected to exercise here.

Affections of the eye, ear and throat are all quite common here, and generally of a catarrhal nature. As a rule they readily yield to our treatment when seen in the acute stage, but often fail to apply for treatment until they have become chronic and are then quite obstinate.

I some years ago formulated an application for general purposes in catarrhal affections of the mucous tissues which has served me well, especially when somewhat chronic:

Tannin,	grs.	10
Morphia,	"	2
Tinct. Myrrhæ,	gtt.	30
Tinct. Camphor,	"	10
Acid Carbolic,	"	4
Glycerine,	oz.	1

Which I apply to the diseased mucus surfaces with a c. h. brush. For children, of course, I dilute it with aq. rosa q s.

Another local application has done me good service: Liquor bismuthi et hydrastin, C. & G. & Co.; also Pond's Extract (hamamelis). I have also employed fl. ext. eucalyptus with aq. amygd. dulc. or pure glycerine very satisfactorily, and always use a detergent wash of common

salt. We of course employ at time our old standard remedies, zinci sulph., argent nitras, cupri sulph., etc.

In regard especially to that much dreaded form of disease of the eye of new-born infants, "ophthalmia neonatorum," I would state that in an extensive practice here extending through a period of over twelve years, I have seen very few cases of that affection, probably not to exceed a dozen. You will readily perceive, therefore, that it is not very prevalent in this section of the country.

I remember one case in this village which came under my observation and treatment some two years ago, which impressed me with the fact that a case, however unpromising it may seem at first, may yet turn out well by efficient treatment perseveringly applied. What surprised me most was a perfect recovery after the eyes were invisible for two weeks, on account of swelling and the impossibility of getting into eyes with any sort of treatment for so long a time, together with the very profuse muco-purulent discharge: of the various applications into eyes after reduction of the tumefaction, argent nitras (1 gr. to oz. aq.) yielded the most satisfactory results.

The case was a most interesting one on account of its seeming hopelessness and the perfect recovery made. Although I have not time nor data at this date to report it in detail, suffice it to say that it has taught me to reserve an unqualified, unfavorable prognosis in the most unpromising case of ophthalmia neo-natorum.

Very cordially yours,

C. G. SLAGLE.

A. BLITZ, M. D., Chairman of Committee on Ophthalmology, Minnesota State Medical Society:

Your circular is before me, and I trust that you—whom untoward circumstances have made an ophthalmologist, and who still keep alive your sympathy with this class of inquiries which nature intended you to pursue and adorn—you will excuse me to your brethren when I frankly confess my inability to do justice in relation to that very important disease, denominated blennorrhœa neonatorum.

Observation has taught me that a large per cent of all the inmates of our blind asylums have lost their vision through this affection, the clinical features of which so closely resemble those of purulent ophthalmia, and gonorrhœal ophthalmia, as to render a differential diagnosis very difficult, and as some have stated almost unnecessary; and as a consequence some of our ophthalmologists have on certain occasions employed a phraseology which is calculated to mislead.

They inform us that when the disease manifests itself and cannot be traced to a source of infection, we must regard it as purulent ophthalmia, and if it develops in an adult and assumes a rapidly violent and threatening aspect, we should call it gonorrhœal ophthalmia; but if it occurs in an infant several days or several weeks old, we should pronounce it blennorrhœa neo-natorum. And this appears to me as an adventurous draft on the power of the cause of this disease to divide itself and distribute its forces. But, unless we are perfectly sure that they are overstepping the bounds of reason, that they are sinning against observed fact or demonstrated law, we should be cautious in condemning them; in fact, we ought to justify rather than condemn, for they seem to show the perfect competence of the germ theory, as regards divisibility and distribution, to bear the heaviest strain that has hitherto been imposed upon it.

Twenty-five per cent. of all eyes that have suffered from this disease show corneal complications, which claim every attention; and it would be immensely interesting to all of us if you who has brought your imagination to bear upon this subject could make us see, as you have seen, a vorstellung, representing the entangled pathological processes involved in a keratitis, and especially when ulceration has been fairly established, to watch it, as it extends successively from the external epithelial layer, through Bowman's membrane, the elastic lamina, or the membrane of Descemet, until the posterior epithelial layer becomes involved, and opens up the anterior chamber.

During the thirteen years that I have been in this State, not more than a dozen cases of this disease have occurred in my practice, and in them all have invariably established the existence of a leucorrhœa in the mother, and a probable infection. The treatment of blennorrhœa neo-natorum hardly differs from that of purulent ophthalmia. I have not found it necessary to use a stronger application than a five-grain solution of the nitrate of silver once a day, and carefully wash this off with a solution of salt and water, giving the greatest care to the applications of cold and the use of disinfectants. As the cornea may become involved early in apparently mild cases, I usually inspect it daily, regardless of the great swelling of the lids. I never use atropia unless the cornea shows signs of becoming affected.

Should a suppurative keratitis occur in the course of this disease, it should be treated with atropine, hot applications, boracic acid, chlorine water, and various constitutional remedies.

Yours truly,

J. C. ROSSER.

SPRING VALLEY, Minn., April, 1883.

A. BLITZ, M. D., Minneapolis, Minn.

In response to your circular I have the pleasure to say that as a country surgeon and physician I am quite often called to treat diseases of the eye. During the year last past I have not seen a single case of opthalmia neo-natorum. I have seen a few cases in my field in other years past. It certainly is of rare occurrence in this locality. I look upon it as an aggravated form of purulent conjunctivitis. Am I right? I see a considerable number of catarrhal, purulent and granular conjunctivitisa (trachoma). Next in frequency is iritis, and phlegu-tenular conjunctivitis. Keratitis is seen almost as frequently as the last two. I try to make a correct diagnosis of each case as it presents itself. I try to treat each case properly. I try to *see* more than simply "sore eyes," for which the same unvarying nitrate of silver "eye water" is given, as is the manner of some "medicine men." What do you think of the treatment of some of these diseases by the "dry method?" I have found it of great benefit. A powder something like the following I have found very useful: Iodoform; Hydrang. chlor. Nietis; Sach Alba—equal parts.

Triturate long and well in a wedgewood mortar. Sift a little into the eye off a camel's hair brush two or three times a day. Perhaps you will smile at my idea of these things. I am aware that many specialists have a thought that the general practitioner knows but little or nothing of the diseases which fall into his special line. But from sheer necessity the said general man of all work, the "country doctor," often treats some of these cases with as fine results as are ever achieved by the specialist. In all our small towns and villages there are always people who cannot afford to go from home to consult gentlemen of your class. These people some of us *must* treat. We

wish to do it well. Give us all the light you can upon these common diseases of the eye in your forthcoming report.

Yours very truly, R. L. MOORE, M. D.

HOWARD LAKE, Minn., April 13, 1883.

A. BLITZ, M. D., Chair'n Committee on Ophthalmology:

Dear Sir: Have not met with but one case of ophthalmia neo-natorum in the last year. I saw a case last week (5th inst.) in an infant three weeks old; mild form; both eyes involved; eyes began to get sore within a few days after birth. When I saw the case there was a slight discharge of pus and flakes of lymph, some photophobia; cornea not involved. There was no history of gonorrhea in mother, but she had had leucorrhea. It was her first child. Mother eighteen years of age.

Infant's eyes had been frequently bathed in breast milk but were gradually growing worse. Ordered acid boracic grs. 4, aqua distil oz. 1; sig.: drop in eyes every 4 hours; vasaline applied to lids night and morning; pus to be frequently removed. Patient at this writing is doing well; eyes almost well.

This part of the county (Wright) is remarkably free from eye troubles. We occasionally meet with a case of granular ophthalmia. I do not accept any parasitic theory of the origin of granular ophthalmia which has become so popular; it is not practical. I will give you history of one case of conjunctivitis, with inflammation and ulceration of cornea (ulcer on lower and outer margin of cornea), following an attack of erysipelas:

Mrs. G., aged sixty, consulted me in September, '82, in regard to above trouble. Vision was impaired, great photophobia, ciliary irritation, rosy zone around margin of cornea with considerable cloudiness of cornea, turbid and swo[illegible]il contracted. Ordered atrophia grs. 2

to oz. 1, aqua ter in dil with cold compresses; also acid boracic grs. 4 to oz. 1, aqua ter in dil.

Saw patient on day following. Pupil well dilated, less pain and not so much photophobia; but the condition of cornea and eye did not look any better. The treatment was continued for a week, except atropia was not used so often, only often enough to keep pupil well dilated, as this gave great relief to pain and intolerance of light. At the end of this time the inflammation and ulceration of cornea seemed to be growing gradually worse. Knowing that oculists recommended and used eserin in peripheral ulceration of the cornea, I determined to give it a trial in this case. Not having any on hand (neither did our druggist), I ordered some from a wholesale house and began its use as follows: Eserin grs. 1, aqua distil oz. 1; mix; to be dropped in 3 times a day. I made first application to eye and watched the effect. The pupil was very much dilated, but when eserin was applied it began to gradually contract; in fact, I could see the contraction taking place. Patient complained of great pain and aching in the eyeball for about half hour after using the eserin, when, to my surprise, all pain, photophobia and lachrymation ceased.

Saw patient the day following. The cornea had improved very rapidly, pupil contracted, and cloudiness of cornea disappearing; only slight aching after using eserin.

The patient from this on made a rapid recovery, only a very slight cicatrix being left by ulcer. During the treatment patient's bowels were kept regular, and gtts. 20 tr. ferri chlor. given internally 3 times a day.

The above is about all that I have had in the way of disease of the eye that will probably be of any interest. And if there is anything in the report that you think will be of interest to the profession you are at liberty to use it as you may think best.

Very respectfully, E. Y. CHILTON.

OTOLOGY.

CLINICAL REPORT.

I wish to call the attention of the profession to the very important subject of diseases of the ear.

We too frequently hear the cry that diseases of the ear are not understood, and consequently general practitioners are disposed to neglect them. The results of this neglect are only too well known to every aural surgeon. It should be remembered that diseases of the ear are more dangerous to life, to say nothing of the discomfort of the patient, than those of any other organ of special sense. The great frequency of this disease, especially in childhood, and the very great importance of early treatment, need not be dilated upon here. Those of you who are familiar with recent advances of otology will agree with me in saying that it occupies a foremost rank in medical science. The text book (Diseases of the Ear and Adjacent Organs) recently published by Politzer, is as complete, as exhaustive, and as satisfactory as has ever been issued on any specialty. It shows how faithfully, how diligently and how zealously this class of maladies has been studied in recent years.

ACUTE OTITIS PURULENTA MEDIA.

Although I have not been in the State sufficiently long to gather accurate statistics, yet it seems that acute diseases of the ear are much more common than in the Eastern States. This is also a common opinion among the people. This disproportion may be due to our climate. The cli-

mate of Minnesota is characterized not only by extremes of cold and heat during the year, but by sudden changes within a few hours. I remember last winter, while attending a case of acute otitis media, noticing the thermometer each day while waiting for the servant to open the door, one day it registered 20 degrees below zero, the next day at the same hour it registered 20 degrees above; thus a change of 40 degrees in 24 hours.

Our high winds, which during the winter season are very severe and penetrating, are fruitful sources of this malady, which is one of the most important that the aurist is called on to treat. The material upon which this brief report is based is forty cases treated recently in private practice, which are brought forward mainly to illustrate the treatment. By far the larger number of cases come under our care during the winter and spring months. The causes of acute purulent otitis media are numerous, such as scarlet fever, measles, pharyngitis, pneumonia, typhoid fever, etc. I have met three cases due to the improper use of the nasal douche. Two of the above cases occurred as complications of typhoid fever; both were extremely obstinate and difficult to cure. Two cases were due to bathing in cold water. This may be due to the water entering the external canal, but is more frequently due to sudden deglutition during diving or swimming; the mouth, nose and pharynx being filled with cold water forces open the eustachian tubes and water enters the middle ear and gives rise to the purulent inflammation.

I do not intend to enter minutely into the symptomatology or diagnosis of this malady. The symptoms vary from the most insignificant to the gravest, from little or no pain to the greatest agony, calling for the most powerful narcotics to give relief, from very slight constitutional symptoms to convulsions and coma. Cerebral symptoms are not common, but always give rise to the greatest anx-

iety on account of the great danger. An examination of the ear usually shows the following condition: The osseous part of the canal is swollen and inflamed. Sometimes in children with the scrofulous diseases the whole external ear becomes swollen and the lympatics of the neck take part in the tumefaction, the ear-drum assumes a uniform dark-red or scarlet color, but the vessels are not usually injected. It is livid and ecchymosed. The cutis become swollen and like the handle of the malleus, and the short process set off on the red background looks like a yellow pustule. Even before perforation there is often a distinct pulsation. Before perforation the membrane begins to bulge at some point, usually the posterior inferior quadrant.

Out of the forty cases here reported there were no deaths.

Dr. Knapp reported 182 cases some years ago in which number four deaths occurred, showing that the disease is by no means devoid of danger. The same authority says that "permanent and complete cure is the rule, at least eighty per cent., in primary acute otitis media purulenta." Such are the results of my own observation. With care and attention and proper docility on the part of the patient I think the percentage of perfect cures is much higher.

Due to the fact that at the present time acute otorrhœa is so successfully treated, chronic otorrhœa has become a rare disease, whereas formerly it was one of the most common that the aural surgeon was called on to treat.

Treatment.—The first and most important remedy is rest—absolute rest in bed. This is the great healer of all inflammations. It is just as necessary for the small organs as the large. I have always noticed that the patients who make the shortest, most perfect and satisfactory recovery are those who remain at home and in bed. All the symptoms are less severe and the patients save

themselves much suffering. Pain is usually the first symptom to be relieved. I always make use of moist heat and never have met with a case that did not acknowledge relief by its application. Some of the best authors, however, recommend the application of cold water. The application of leeches is very efficient and should always be used. I feel very confident that we are sometimes able to avert an attack of otitis media by the early application of leeches, but if we do not succeed in so doing, will always lessen the severity of the attack. When the discharge suddenly diminishes and at the same time the pain grow worse, nothing is more efficient than steam applied to the ear. It causes the discharge to reappear, and thus relieves the pain. I make the following quotation from Knapp:

"I obtained the happiest results from steaming in some cases in which cerebral symptoms were so marked that an opening of the mastoid seemed justifiable. And I have seen so much benefit derived from this popular mode of treatment that I try it in every case, especially in chronic otorrhœa in which the discharge suddenly ceases and pain and vertigo, fever and other symptoms, together with local injection, proved that the inflammation has not subsided but has become more intense. In the majority of such cases the steaming brings back the discharge and relieves the suffering."

When the usual remedies do not give relief operative interference should not be delayed.

The posterior nares are kept clean with the post nasal syringe. I also make use of the glycerole of iodine when the mucous membrane of posterior nares and eustachian tubes are swollen. For the first few hours of the attack I refrain from the use of the politzer, as it only increases the suffering, and I am disposed to think aggravates the inflammation.

After the drum is perforated and the discharge free I

commence the use of the air bag, as nothing so rapidly restores the hearing. Thus confidence and courage is gained on the part of the patient, which aids vastly in the battle. In this class of patients the politzer is more efficient and certainly more convenient than the catheter. I do not syringe the ear, as I am confident that it prolongs the discharge and course of the disease.

For cleansing purposes I make use of cotton on the applicator. After each cleansing I blow a little boracic acid in the external ear. This is the antiseptic treatment introduced by Bezold. Resort is made to astringents only when the dry treatment does not stop the discharge with sufficient rapidity. In this number of cases it was necessary to resort to astringents only in two.

In regard to length of time over which treatment extended—the shortest three days; the longest four weeks; the average two weeks.

There is not doubt but that the boracic acid treatment has shortened the duration of the disease, and it seems to me that relapses are less frequent.

In some few cases great relief is obtained in the early stage of the disease by paracentesis. The indications for the operation are mucus rales, bulging of the membrane and great pain. By this means not only is the pain relieved like magic, but Politzer thinks that the danger of the inflammation spreading to the brain is removed.

Accumulation of Fluid in the Tympanic Cavity.—Mr. B., aged fifty-four, railroad official, had had for a few weeks a constant sense of pressure and weight in the right ear which interfered very much with his comfort. This came on after repeated colds. He had slight follicular pharyngitis and is the victim of nasal catarrh with constant secretion. There is slight tinnitus. The tuning fork was heard better in the right ear. Hearing distance was 8–40 for left ear and watch on contact in the right ear. Both eustachian tubes were pervious. There was

considerable bulging of the right ear-drum with loss of brilliancy of the light spot. While watching the drum with a bright light and telling the patient to perform Valsalva's experiment, air bubbles could be seen rising and bursting in the upper part of the cavity Thus it seemed certain that considerable accumulation of mucus had taken place in the tympanum. Paracentesis of the drum was performed. The puncture was made in the lower posterior quadrant. Quite a quantity of mucilaginous liquid ran out, so as to completely fill the external auditory canal. The operation completely relieved the sense of pressure and weight, also the tinnitus. The acuteness of hearing rapidly improved and the patient was dismissed in a short time with his hearing almost perfectly restored.

These cases of sub-acute or chronic inflammation of the middle ear with the accumulation of fluid exudation are not very common. I have met with several in addition to the one reported here. So far as I know they all terminate favorably after the cavity has been rid of its fluid contents, which can easily be done by paracentesis and injection.

Myringitis.—Since having located in Minnesota I have been much interested in studying the diseases peculiar to this climate and the influence of this climate on diseases of the eye and ear. One of the first things which attracted my attention was the unusual prevalence of myringitis. It is considered one of the rarest of diseases, and some of the best authors deny its existence. But I am convinced that if they were engaged in active practice in Minnesota they would change their opinion. I have reported eighteen cases altogether and published them in detail in the Northwestern Lancet. I shall report one of those cases here simply as a text for the paper:

Mr. S., aged thirty, a traveling agent, strong and robust; was called to see him after he had been suffering for about twenty-four hours. Patient complained of a

severe stinging, piercing pain, extending toward the parietal bone and downward to the neck. There was very slight tinnitus and at times a feeling of throbbing or pulsation in the ear. The acuteness of hearing was but slightly impaired. The patient was much alarmed, as he had always enjoyed good health and never knew what it was to have ear trouble. There was no fever or any evidence of constitutional disturbance.

An examination of the membrana tympani showed the following condition: There was intense hyperæmia of the greater portion of the ear-drum, but no evidence of any inflammation of any part of the external canal. The whole of the dermal layer was somewhat swollen. Upon the posterior middle portion there was a small blister about the size of a pea, having a dark yellowish hue. The next day this was somewhat shrunken and soon disappeared by rapid absorption of its contents. On the third day after I saw him, which was the fourth day after the attack, the whole membrane was covered with a whitish exudation which was easily removed by cotton on the filler dampened with a little lukewarm water. All the landmarks of the membrana tympani could be distinctly seen. The tinnitus had ceased and the hearing was normal. The patient was well at the end of five days.

This case has been reported somewhat in detail as it is typical, showing the course that the disease usually runs.

The only treatment ordered was the application of leeches and instilation of a 2-grain solution of atropia into the external meatus. As for the diagnosis, I think there can be but little doubt as to its correctness.

There being no constitutional symptoms, the absence of a feeling of fullness or of pressure, the rapid decrease of the inflammation and the much shorter stage of convalescence, distinguish this from the more severe, prolonged and painful disease, acute otitis media.

In myringitis the pain usually comes on suddenly in the night, the patient having retired in the usual health. When the inflammation is superficial the pain is less severe and the acuteness of hearing may be quite normal. When the exudation takes place into the deeper structures the pain is more severe and prolonged and the acuteness of hearing may be considerably impaired.

In regard to the causation of this malady, Politzer says: "The cause of primary myringitis cannot always be determined; it has been proved that it sometimes develops after the action of cold wind upon the ear, after a cold bath, after sea-bathing or in the course of acute naso-pharyngeal catarrh." The most frequent cause in this climate is the action of cold air on the membrane. Out of eight cases which I have studied since the 1st of January, 1883, six seemed to be due to this cause. The inflammation usually begins a few hours after the exposure. In regard to the frequency of this disease it is yet impossible to determine. It is quite frequently met with in this climate, which during the winter season is quite severe and the winter very long. Out of 100 ear cases which I have treated in private practice since the 1st of January eight were cases of undoubted myringitis. There were others of a doubtful nature, which have not been reported, and were classified with other maladies.

The course of the disease is run in about six or seven days. The exudation into the membrane is rapidly absorbed, and it soon returns to a normal condition and the patient experiences no further difficulty. So far as I have been able to study the disease there is no disposition to relapses.

I have already spoken of the formation of blisters and abscesses on the external surface of the ear-drum. It is likely that the same condition takes place on the interior surface, although almost impossible to diagnoses. Politzer, in speaking of this subject, says:

"Bursting of the abscesses inwards is very rare. In one case I was led to believe that this had occurred from the rapid disappearance of the abscess with a consequent rapid decrease in the hearing distance and from the sudden bulging outward of the collapsed swelling after the application of my method. The communication by the swelling with the cavity of the abscess was placed beyond doubt through the sharp definition of the exudation from inflated air."

Thus the clinical identity of myringitis as a primary disease can no longer be doubted, as all the above cases prove the disease is characterized by pain and tinnitus, but no marked dullness of hearing. Upon inspection the drum seems to be more or less congested, according to the stage of the disease and the severity of the attack, but its position is normal and there is no inflammation of the external canal. There may be no evidence of any trouble with the eustachian tube or the mucous membrane of the middle ear. The congestion goes on to active inflammation and implication of the tissues of the drum, and this may develop into blisters or abscesses on the external surfaces, or sometimes the abscesses may form in the deeper structures, giving rise to greater pain and a longer duration of the attack. This condition may go on to perforation by erosion from without inwards.—*Burnett.*

The same author says: "I have assured myself by means of the catheter and by incisions through the drum-head that the tympanum is free from disease in all such cases as could be termed myringitis which I have seen. I am disposed to consider so-called myringitis an inflammation usually if not always of the dermal layer of the drum."

The treatment does not differ materially from that of inflammation in other parts of the auricular appendages.

The most urgent symptom to be relieved is the pain,

which can be done by the application of moist heat, narcotic embrocations and local bleeding. Leeches are efficient, but scarification, as suggested by Dr. Blake, of Boston, is probably more so. The parts to be scarified are those of greatest congestion. The instillation of a 2-grain solution of atropia seemed to give relief in some of the cases. When there is no trouble with the eustachian tube or with the middle ear the air bag should not be used, as it only increases the pain.

J. F. FULTON, M.D.

Report of Committee on Necrology.

D. W. HAND, CHAIRMAN.

In the year just passed death has come suddenly and unexpectedly to several of our old associates. Scarcely had the excitement attending our last meeting and that of the American Medical Association passed away when Dr. Francis Atwood, after a few weeks' illness, suddenly expired. He was a true physician and a close student. He had acquired a position in this State that will be hard to fill, and his loss to our profession has been very great. A notice of Dr. Atwood's death was published in the last volume of our transactions.

Dr. W. W. Sweney.

Following soon upon the death of Dr. Atwood came that of our dear old friend, Dr. W. W. Sweney. Although for a long time in feeble health, he was at our meeting in June last, so bright and cheerful it seemed he could not be so near the end.

Next to the late Dr. Blood, he was the most faithful attendant of our meetings and the most conscientious in the performance of all society and professional duties. His vacant seat will cast a shadow over our meeting. Less than a year ago, in writing me about some commendable work, he referred to a report about my being sick, and said: "Take care of your health, doctor; the pleasure of our yearly meetings would be much lessened by the absence of our old friend."

And so it is that each year we miss some one who has stood by us through the early struggling days of this Society.

Dr. Sweney was born in Milton, Pa., Dec. 18, 1818, and began his education in the public schools. In 1836 he accompanied his father to Illinois, and for the next ten years worked hard on a farm and in a country printing office. In 1847 he began the study of medicine, and while still engaged in that study came to St. Paul, where he remained until October, 1850, when he went to Rush Medical College, Chicago. Graduating from that institution in 1851 he returned to St. Paul, but the following year removed to Red Wing, where he finally located and became the honored and trusted physician of all that section of country.

He was a skillful physician, and so much interested in his cases that he would forget all about himself and his own health and comfort. His kindly, gentle manners won him friends everywhere; but he was the poorest of collectors, and it was little satisfaction to those who loved him to see the way his goodness was imposed upon.

A careful observer and an easy writer, his papers have been the most finished and valuable of any presented to the Society. He was specially interested in the laws regulating epidemics, and advanced frequent theories to account for them. His views were always interesting even when we could not accept them as correct; and his motives we all know were thoroughly unselfish.

As on that hot August afternoon we laid him away to rest in the beautiful cemetery which so grandly overlooks the broad Mississippi and the thriving city he called his home, and saw the respect and love in which he was held by all his fellow-citizens, we felt that it was a fitting end to a life so true and good.

He died at Red Wing, Minn., on the 12th of August, 1882, in the 64th year of his age.

Dr. John Stites Whilldin.

Died—In St. Paul, Minn., Nov. 23, 1882, Dr. John Stites Whilldin, aged 45 years.

Dr. Whilldin, although a new member of our Society, was favorably known to many, and his sudden and unexpected death was a shock to all.

He was born in Philadelphia in 1837, and his father, Alexander Whilldin, was one of the most prominent and honored merchants of that city.

After graduating with honor at the Philadelphia High School, young Whilldin went to Amherst College, where he graduated in 1859. Immediately taking up the study of medicine, he entered the University of Pennsylvania, where he graduated M.D. in 1861.

The same year he went to Erie, Pa., and settled down to wait for patients; but in 1862 he was appointed assistant surgeon of the 145th Regiment Pennsylvania Volunteers, and was at once sent to the front. After much severe service in the field, he was two years later promoted to surgeon of another Pennsylvania regiment, and with it served until the close of the war.

He then returned to his practice at Erie, and soon after married Miss Mary Williams, who, with one daughter now 13 years old, survives him.

In 1867 he gave up the practice of medicine and went into mercantile business in Philadelphia with his father and brothers. This life, however, never quite suited him, and it was with much satisfaction he turned his back upon it, and in April, 1882, after attending a post-graduate course of lectures in Philadelphia, settled down to the practice of his profession in St. Paul.

He rapidly made friends, and many here will recognize as true the portrait drawn by one of his Erie companions:

"He was a man of large ability, and his serene temper, cheerful and friendly disposition, greatly endeared him to

all with whom he associated. He brought to the performance of his duties a rare exactness, method, sagacity and wisdom; and with these qualities were combined the heart and the manners of a true Christian gentleman, so that he honored as well as filled a place in the medical profession. True and manly in his friendships, tender-hearted and generous, his memory will be cherished for many a day by those who knew him best."

DR. J. E. TIBBETTS.

Dr. J. E. Tibbetts, of Cannon River Falls, died on the 11th of October, 1882, aged 70 years, after an illness of ten years, the greater portion of which time he had been confined to his bed. He was born in New Hampshire in 1812. Before he studied medicine he acquired a thorough knowledge of practical chemistry in the laboratory of a practical pharmacist of Providence, R. I., who was at that time very well known. He began his study of the science of medicine in the office of an uncle, Dr. Emory of Sharpleigh, Me., and later with Dr. Tewksbury of the same place. After graduating at Bowdoin he practiced for four years in Maine, and then went South, where he married and practiced four years longer in Tennessee and Louisiana. The climate there being unsuited to him, he went to St. Louis, where he expected to remain permanently. Shortly after this, however, he was seized with the prevailing epidemic, Western fever, which brought him to Minnesota in 1856, and in those troublous times he took up the burden of his lifework here.

Dr. Tibbetts was much beloved by all those who knew him, and was a power in Cannon Falls where he and his sayings, witty and wise, will be very long remembered. He was a man of sterling worth, both as a physician and as a member of society. There was a positiveness and directness about him which left no one in doubt as to what he meant, and he always said what he did mean.

He was singularly successful as a physician, a facile diagnostician, he possessed the inestimable gift of a cheerful face and manner, with which and his skill he won his patients back to health, or when that could not be he smoothed the way towards the river.

The Doctor's widow, an estimable lady, and three daughters are living in Stillwater, whither he had gone, as he said on leaving Cannon Falls, to die. His professional success had not brought him its financial equivalent, a condition not rare in the profession, and he died as he had lived, honest, honored and poor.

Dr. Ralph Parkin.

Dr. Ralph Parkin, who died at Minnesota Lake on the 16th of April, 1882, was one of our youngest members and not generally known; but from reports received through friends it is plain that he was a worthy man and most promising physician.

Dr. Parkin was born in Durhamshire, England, Feb. 9th, 1848, but when two years old was brought to this country by his parents, who settled in Wisconsin. His father dying when he was eight years old, he had to struggle through all his early life with poverty, and had only limited advantages for study. Securing, however, by his own exertions a fair preliminary education, in 1870 he began the study of medicine with Dr. Evans of Evansville, Wis., and in 1874 graduated at Rush Medical College.

The following year he settled at Minnesota Lake, Faribault County, Minn., and soon secured a satisfactory practice.

In December, 1877, he was married to Miss Mary Eldridge of Evansville, Wis., who with one infant daughter survive him. His death resulted from septicæmia following a neglected abscess in the calf of the right leg. His remains were taken to his old home in Wisconsin for burial.

PRESIDENTS OF THE SOCIETY.

SAMUEL WILLEY,
1869–1871.

FRANKLIN STAPLES,
1871–1872.

W. W. MAYO,
1872–1873.

W. W. SWENEY,
1873–1874.

N. B. HILL,
1874–1875.

J. H. STEWART,
1875–1876.

F. H. MILLIGAN,
1876–1877.

OTIS AYER,
1877–1878.

J. E. FINCH,
1878–1879.

A. C. WEDGE,
1879–1880.

A. J. STONE,
1880–1881.

C. N. HEWITT,
1881–1882.

P. H. MILLARD,
1882–1883.

W. L. LINCOLN,
1883–1884.

LIST OF MEMBERS.

A. W. Abbott, Minneapolis.
E. J. Abbott, St. Paul.
E. D. Abell, Shakopee.
C. P. Adams, Hastings.
W. T. Adams, Elgin.
Frank Allport, Minneapolis.
A. B. Ancker, St. Paul.
J. W. Andrews, Marshall.
Clara E. Atkinson, St. Paul.
Otis Ayer, Le Sueur.
William Baldwin, St. Paul.
R. D. Barber, Worthington.
E. E. Barnum, Minneapolis.
C. K. Bartlett, St. Peter.
W. L. Beebe, St. Cloud.
J. W. Bell, Minneapolis.
Charles Berry, New Ulm.
C. S. Bigelow, Claremont.
E. B. Bigelow, Owatonna.
D. P. Bigger, Brainerd.
Ira N. Bishop, Howard Lake.
F. E. Bissell, Litchfield.
F. A. Blackmer, Albert Lea.
A. Blitz, Minneapolis.
J. G. Brigham, St. Cloud.
C. H. Boardman, St. Paul.
J. E. Bowers, Rochester.
D. F. Brooks, Minneiska.
E. J. Brown, Minneapolis.
A. M. Burnham, Albert Lea.
F. R. Burnham, St. Paul.
H. J. Burwash, Minneapolis.
C. Carli, Stillwater,
E. P. Case, Waterville.
A. B. Cates, Minneapolis.
T. J. Catlin, Delano.
J. W. Chamberlain, St. Paul.
O. S. Chapman, Minneapolis.
E. Y. Chilton, Howard Lake.
C. N. Clark, St. Charles.
Ida Clark, Rochester.
T. C. Clark, Stillwater.
A. B. Cochrane, Rochester.
J. C. Cockburn, Minneapolis.
J. M. Cole, Winona.
J. B. M. Cole, Minneiska.
D. B. Collins, St. Peter.
A. T. Conley, Cannon Falls.
C. O. Cooley, Madelia.
H. L. Coon, Northfield.
R. O. Craig, Janesville.
F. W. Cram, Sheldon, Iowa.
F. J. Cressy, Granite Falls.
E. C. Cross, Rochester.
D. S. Cummings, Waseca.
A. W. Daniels, St. Peter.
C. E. Dampier, Crookston.
James Davenport, St. Paul,
E. J. Davis, Mankato.
Wm. Davis, St. Paul.
G. W. Davis, Duluth.
David Day, St. Paul.
F. Dedolph, St. Paul.
J. J. Dewey, St. Paul.
L. P. Dodge, Farmington.
Wm. Dodge, Le Sueur.
Charles Dolan, Waterville.
Ignatius Donnelly, Jr., St. Paul.
J. H. Dorsey, Glencoe.
C. W. Drew, Minneapolis.
J. A. Dubois, Sauk Center.
J. H. Dunn, Shakopee.
F. A. Dunsmoor, Minneapolis.
G. W. Emery, Minneapolis.
O. J. Evans, Minneapolis.
J. J. Everhard, Kasson.
C. A. Entrup, Shakopee.
W. C. Eustis, Farmington.
A. C. Fairbairn, Minneapolis.
J. H. Fairfield, Northfield.
J. E. Finch, Hastings.
J. C. Fitch, Hastings.
S. D. Flagg, St. Paul.
C. L. Flannagan, Minneapolis.
W. D. Flinn, Redwood Falls.
J. F. Force, Heron Lake.
H. W. Foster, Minneapolis.
J. R. Freeman, Morris.
G. F. French, Minneapolis.
Wm. Frisbie, Mankato.
J. F. Fulton, St. Paul.
W.W. Furber, Cottage Grove.
J. R. M. Gaskill, Marine Mills.
E. S. Gibbs, Monticello.
A. W. Giddings, Anoka.
A. O. Gilman, St. Cloud.
Edith M. Gould, St. Paul.
B. F. Graham, Minneapolis.
G. W. Greaves, Glencoe.
Wm. Greaves, Northfield.
C. A. Green, Windom.
R. A. Gove, Millville.
C. Gronwald, Norway.
H. C. Grover, Rushford.
A. Guernon, Little Falls.
M. Hagen, St. Paul.
E. W. Hammes, New Trier.
S. F. Hance, Minneapolis.
D. W. Hand, St. Paul.
A. W. Hedderly, Minneapolis.
P. A. Heitz, Hastings.
C. N. Hewitt, Red Wing.

Charles Hill, Pine Island.
H. S. Hill, Owatonna.
R. J. Hill, Minneapolis.
W. M. Hollister, Austin.
E. A. Holmes, Oronoco.
Mary G. Hood, Minneapolis.
E. F. Horst, St. Paul.
J. R. Howes, Brainerd.
H. F. Hoyt, St. Paul.
J. P. Humes, Winnebago City.
D. W. Hunt, Durand, Wis.
M. V. Hunt, Waseca.
Mrs. A. M. Hunt, Minneapolis.
W. A. Hunt, Northfield.
C. H. Hunter, Minneapolis.
E. A. Hutchins, Minneapolis.
L. D. Jackson, Grand Meadow.
Wm. Jacoby, Minneapolis.
Bruno Jaehrig, Red Wing.
J. H. James, St. Peter.
William Jenner, Stillwater.
Paul C. Jensen, Albert Lea.
H. P. Johnson, Houston.
J. P. Johnson, Blooming Prairie.
Philo F. Jones, Red Wing.
Talbot Jones, St. Paul.
W. A. Jones, Minneapolis.
C. M. Jordan, Minneapolis.
Samuel Keith, Minneapolis.
E. S. Kelly, Minneapolis.
C. R. J. Kellum, Heron Lake.
V. P. Kennedy, La Moure, D. T.
H. H. Kimball, Minneapolis.
G. H. Knight, Faribault.
J. R. Kinney, Minneapolis.
J. Koehl, Minneapolis.
Fred T. Koyl, Ada.
G. A. Lamb, Minneapolis.
L. C. Lane, Ortonville.
W. S. Laton, Minneapolis.
H. E. Latz, Minneapolis.
Daniel Leasure, St. Paul.
George Leininger, Red Wing.
F. Lessing, Winona.
W. L. Lincoln, Wabasha.
A. H. Lindley, Minneapolis.
S. H. Lindley, Minneapolis.
Q. A. Lowe, Wabasha.
C. E. Lundgren, St. Paul.
A. Macdonald, St. Paul.
J. A. Mac Donald, Chaska.
T. T. Mann, St. Paul.
M. H. Manson, Shakopee.
T. M. Marcellus, Sleepy Eye.
J. C. Markoe, St. Paul.
W. W. Mayo, Rochester,
B. J. Merrill, Stillwater.
G. F. Merritt, St. Peter.
C. A McCollum, Dassell.
C. F. McComb, Duluth.
S. C. McCormick, Duluth.
Thomas McDavitt, Winona.
S. W. McEwan, Alexandria.
J. B. McGaughey, Winona.
F. McGuire, Blue Earth City.
T. M. T. McKennan, Minneapolis.
H. L. McKinstry, Zumbrota.
W. R. McMahon, Mankato.
O. H. McMichael, Vernon Centre.
R. S. McMurdy, Minneapolis.
Geo. McMurphy, Ortonville.
M. Michaelsen, Delavan.
P. H. Millard, Stillwater.
Winthrop Miller, Minneapolis.
F. H. Milligan, Wabasha.
Lester C. Mitchell, Minneapolis.
J. B. Moffett, Minneapolis.
G. R. Moloney, Belle Plaine.
R. L. Moore, Spring Valley.
A. Mueller, New Ulm.
L. H. Munger, Fairhaven.
A. J. Murdock, Minneapolis.
H. G. Murdock, Granite Falls.
J. H. Murphy, St. Paul.
Garrett Murphy, Garden City.
Wm. Newhall, Red Wing.
George W. Nichols, Wahpeton.
A. K. Norton, Detroit.
Wm. F. Nye, Minneapolis.
A. Ortman, St. Paul.
H. N. Orton, Minneapolis.
Jay Owens. St. Paul.
W. T. Parker, St. Paul.
John Pearson, Minneapolis.
C. E. Persons. Marshall.
E. Phillips, Minneapolis.
W. H. Pratt, Stillwater.
Harriet E. Preston, St. Paul.
J. F. Preston, Minneapolis.
W. H. Powell, Murdock.
Thos F. Quimby, Minneapolis.
James A. Quinn, St. Paul.
T. George Rainey, Minneapolis.
J. C. Rhodes, Stillwater.
C. E. Riggs, St. Paul.
R. F. Ritchie, Duluth.
F. M. Rose, Faribault.
J. C. Rosser, Brainerd.
A. P. Rounsevell, Delano.
Carl Schulin, St. Paul.
C. Q. Scoboria, Elk River.
A. H. Salisbury, Minneapolis.
A. E. Senkler, St. Paul.
S. B. Sheardown, Stockton.
Thomas W. Sheardown, Stockton.
F. O. Sherwin, Duluth,
C. M. Skinner, Minneapolis.
C. G. Slagle, Minneapolis.

THE NEXT MEETING OF THE SOCIETY

WILL BE HELD AT

STILLWATER,

At 10 o'clock A. M., on the THIRD TUESDAY OF JUNE, 1884.